Chapter 15
Recreation

This chapter describes the physical environment, recreation facilities, and associated recreation activities and opportunities that could be affected by implementing the BDCP alternatives in the study area (Plan Area) (Figure 1-9). Chapter 30, *Growth Inducement and Other Indirect Effects*, Section 30.3.2, provides a discussion of potential specific growth-related effects on recreation in the Delta and State Water Project (SWP) and Central Valley Project (CVP) Export Service Areas, including a discussion of participation in Delta recreation.

15.0 Summary Comparison of Alternatives

A summary comparison of important recreation impacts is provided in Figure 15-0. This figure provides information on the magnitude of the most pertinent and quantifiable recreation impacts that are expected to result from implementation of the alternatives. Important impacts to consider include displacement of existing recreation facilities and the reduction of recreation opportunities.

As depicted in Figure 15-0, construction of some alternatives would result in the displacement of existing well-established recreation facilities available for public access. Alternative 9 would result in the greatest number of recreation sites (six) displaced by the water conveyance facilities. Alternatives 1A, 1C, 2A, 2B, 2C, 3, 5, 6A, 6C, 7, and 8 would result in the displacement of no recreation sites. Alternatives 4, 4A, 2D, and 5A would result in the displacement of two recreation sites.

Each alternative, with the exception of the No Action Alternative, would reduce recreation opportunities at some sites as a result of the construction of the water conveyance facilities. Alternatives 1B, 2B, and 6B would result in the greatest number of sites (18) with reduced opportunities. Alternative 9 would result in reduced opportunities at the fewest sites, three. Alternatives 4, 4A, 2D, and 5A would result in the reduction of recreation opportunities at eight sites.

Table ES-8 in the Executive Summary provides a summary of all impacts disclosed in this chapter.

15.1 Environmental Setting/Affected Environment

15.1.1 Potential Environmental Effects Area

15.1.1.1 Description of Existing Conditions in the Study Area

The Delta, Yolo Bypass, and Suisun Marsh contain numerous parks, extensive public lands, and many interconnected rivers, sloughs, and other waterways that offer diverse recreation opportunities. Privately owned commercial marinas and resorts allow access to the waterways and a variety of other recreational opportunities and services. Private lands also provide several recreational opportunities, particularly hunting. Figure 15-1 identifies public and private recreational facilities in and near the study area.

Recreational Activities and Opportunities in the Study Area

The Delta is a maze of channels and islands at the confluence of the Sacramento and San Joaquin Rivers. It encompasses the largest estuary system on the West Coast. The Delta region is a 1,150-square-mile area that provides more than 500 miles of navigable waterways, equaling more than 57,000 navigable surface acres (California Department of Parks and Recreation's Division of Boating and Waterways 2003). This vast network of rivers, channels, sloughs, and islands provides a unique recreation resource in California.

Based on a statewide survey in which California boaters were asked which waterways they used most out of nearly 300 different waterways, the Delta was identified as a popular boating destinations in the state, exceeded only by the Pacific Ocean, San Francisco Bay, and the Colorado River. In addition, among the 10 regions the state delineated for the survey, the 3 regions that include portions of the Delta (San Francisco Bay, Sacramento River Basin, and Central Valley) accounted for nearly half of the registered boats in the state (California Department of Parks and Recreation's Division of Boating and Waterways 2002).

Recreation users in the Delta often participate in multiple activities during a daily visit; although boating and fishing are the most popular, participants in these activities also take part in wildlife viewing, sightseeing, walking, picnicking, and camping (California Department of Parks and Recreation 1997), contributing to overlap in activity participation by visitors. There is also overlap because activities, such as hunting, fishing, wildlife viewing, and sightseeing, can be both water- and land-based. This overlap creates an interconnected web of users and activities and leads to an appreciation and enjoyment of the Delta for the variety of recreation opportunities available on each trip.

This section provides a description of the recreational activities and facilities in the statutory Delta, as well as a discussion of Delta recreation users and estimates of participation in Delta recreation activities.

Water-Based Recreation Activities

The Delta is a regional destination for water-based recreationists because of its climatic conditions, variety and abundance of fish, large maze of navigable waterways, and favorable water levels during summer, when most regional reservoirs experience substantial drawdown. Activities in the Delta include cruising, waterskiing, wakeboarding, using personal watercraft, sailing, windsurfing, and kiteboarding, as well as fishing and hunting (from land and by boat).

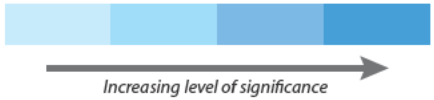
Boating

Most recreational boating use is by small (under 26 feet long) powerboats (California Department of Parks and Recreation 1997; California Department of Parks and Recreation's Division of Boating and Waterways 2003), although larger cruising boats and houseboats are components of boating use in the Delta. Common powerboating activities in the Delta are cruising (exploring the maze of Delta channels), waterskiing, wakeboarding, and using personal watercraft. Opportunities for these activities can be found throughout the Delta, with suitable locations depending on wind, water temperature, channel width, orientation, depth, and proximity to facilities. The Delta provides facilities for boaters including ramps, yacht clubs, and marinas, which often have amenities such as fuel, supplies, waste pump-out facilities, and guest docks. Restaurants and other businesses in the

Chapter 15 – Recreation	Alternative																			
	Existing Condition	No Action	1A	1B	1C	2A	2B	2C	3	4	5	6A	6B	6C	7	8	9	4A	2D	5A
REC-1: Permanent displacement of existing well-established public use or private commercial recreation facility available for public access as a result of the location of the proposed water conveyence facilities (Number of sites)	n/a	n/a	0	3	0	0	0	0	0	2	0	0	3	0	0	0	6	2	2	2
	n/a	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	SU/A	LTS/NA	LTS/NA	LTS/NA
REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyence facilities (Number of sites)	n/a	--	7	18	11	7	18	11	5	8	7	7	18	11	8	8	3	8	8	8
	n/a	LTS/NA	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A

Key

Level of significance or effect **before** mitigation (Quantity of impact: number of sites, structures, acres, etc. affected)



n/a not applicable
> greater than
< less than
≈ about equal to

Level of significance or effect **after** mitigation (CEQA Finding / NEPA Finding)

CEQA Finding
- NI No Impact
- LTS Less than significant
- S Significant
- SU Significant and unavoidable

NEPA Finding
- B Beneficial
- NE No Effect
- NA Not Adverse
- A Adverse

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Figure 15-0
Comparison of Impacts on Recreation

Delta, as well as the towns of Walnut Grove and Isleton, also offer guest docks for temporary boat tie-up.

The summer months (Memorial Day to Labor Day) are the peak times for powerboating activities in the Delta, with the Fourth of July typically the single highest peak-use event of the year, followed by other summer weekends and special event days (California Department of Parks and Recreation's Division of Boating and Waterways 2003).

Boating participation is predicted to increase for the period of 2010–2020 (Plater and Wade 2002). However, boat registration data from the 13 Delta Primary Market Area counties (California Department of Parks and Recreation's Division of Boating and Waterways 2003) for 2002–2009 indicate a pattern of slight but steady declines in boat registrations over that period in most counties (California Department of Parks and Recreation's Division of Boating and Waterways 2003–2010). Overall, the number of registered boats in the Primary Market Area counties fell 5.3% between 2002 and 2009. Given that boats originating in the Primary Market Area account for more than 75% of Delta boating trips (California Department of Parks and Recreation's Division of Boating and Waterways 2003), these data suggest that predicted boating activity increases for the period 2000–2010 have not occurred.

Nonpowered boating activities in the Delta include sailing, windsurfing, kiteboarding, canoeing, and kayaking. All three wind-related activities (sailing, windsurfing, and kiteboarding) are conducted on the main Sacramento and San Joaquin Rivers, with windsurfing and kiteboarding most common on the Sacramento River from Rio Vista to Sherman Island, and on the San Joaquin River from Twitchell Island to Little Sherman Island (California Department of Parks and Recreation's Division of Boating and Waterways 2003). Sailing activities are conducted more widely on the main rivers. Motorized sailboats can use those Delta waterways that are sufficiently deep. In the eastern Delta, canoeists and kayakers can find tranquil, isolated waterways that provide shelter from strong winds and abundant wildlife-viewing opportunities.

Weather conditions make the summer months a preferred time for sailing, windsurfing, and kiteboarding, with peak use times on summer weekends and holidays. Paddle boaters prefer spring and fall off-seasons because of cooler air temperatures, less boat traffic, and more wildlife-viewing opportunities (California Department of Parks and Recreation's Division of Boating and Waterways 2003).

Water- and Land-Based Activity Participation

In 1996, DPR surveyed boat owners and licensed anglers who used the Delta that year (California Department of Parks and Recreation 1997). Among boaters, cruising and fishing from a boat were the most frequent activities, with about 75% of respondents participating in each. The most frequent nonboating activities among boaters were sightseeing, wildlife viewing, and shore-based fishing. (The first two of those activities can be pursued from a boat or land but were categorized as "nonboating" activities by the survey.) The survey of anglers indicated that nearly 90% fished from a boat, about 75% fished from shore, and about 14% fished in tournaments. The most frequent nonfishing activities among anglers were sightseeing, pleasure boating, and wildlife viewing.

Surveys of the small and large boat owners conducted in 2000–2001 for the *Delta Boating Needs Assessment* (California Department of Parks and Recreation's Division of Boating and Waterways 2003) indicated, like the earlier DPR surveys, that cruising, fishing, and sightseeing were among the most popular Delta recreation activities. Large-boat owners placed less emphasis on camping and

picnicking and more emphasis on cruising and sightseeing than small-boat owners (although a majority of both groups participated in those activities) (California Department of Parks and Recreation's Division of Boating and Waterways 2003). Table 15-1 compares the Delta participation rates among small- and large-boat owners in these and other water- and land-based recreation activities.

Table 15-1. Boat Owners' Participation in Water- and Land-Based Recreation Activities in the Delta

Activity	Small-Boat Owners[a] (%)	Large-Boat Owners[b] (%)
Cruising	51	82
Fishing	67	57
Sightseeing	55	65
Camping	31	13
Picnicking	39	25
Swimming	47	68
Skiing/Wakeboarding	40	17
Wildlife Viewing	34	45

Source: California Department of Parks and Recreation's Division of Boating and Waterways 2003.

[a] Small boats were defined as boats less than 26 feet long; data represent the level of participation during small-boat owners' Delta boating trips (all past trips).

[b] Large boats were defined as boats 26 feet long or larger; data represent the level of participation during large-boat owners' most recent Delta boating trip.

Boat Fishing

Boat fishing is a popular activity in the Delta. Game fish found in the Delta include catfish; sturgeon; steelhead; striped, largemouth (black), smallmouth, and spotted bass; American shad; Chinook salmon; crappie; and bluegill (California Department of Parks and Recreation 1997; California Department of Fish and Game 2011a). Boat fishing is a year-round activity in the Delta, with peak-use seasons varying by species, species abundance, and angling regulations. Striped bass are prevalent fall through spring, sturgeon winter through spring, Chinook salmon late summer through fall, and black bass fall through spring (California Department of Parks and Recreation's Division of Boating and Waterways 2003; SacDelta.com 1998). The Delta is one of the most productive trophy bass fisheries in the nation, and numerous bass tournaments are held in the Delta throughout the year, including several corporate-sponsored tournaments (California Department of Fish and Game 2007a). Fishing is an important recreational activity in the Delta and supports commercial guiding and charter boat opportunities.

Boat Hunting

Hunting has long been a recreational activity in the Delta, with waterfowl hunting being the primary type. Hunting by boat (typically used as a floating blind) is popular at the larger flooded islands, such as Franks Tract and Sherman Island, because hunters seek open, shallow waters and marsh areas where waterfowl congregate (California Department of Parks and Recreation's Division of Boating and Waterways 2003). Licenses and duck stamps to hunt waterfowl are required by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS). CDFW manages hunting in California, including the public hunting programs at Sherman Island and other smaller wildlife areas. The California Department of Parks and Recreation (DPR) allows hunting at Franks

Tract, designated as Franks Tract State Recreation Area. Boat hunting is also allowed at Big Break, which is managed by the East Bay Regional Park District (EBRPD) (Delta Protection Commission 1997). Late fall through early winter is the designated waterfowl hunting season, with starting and ending dates varying each year by species and by hunting method.

Other Boating-Related Activities

Boaters also participate in other related activities, such as boat camping (typically in houseboats or other large boats with sleeping accommodations), swimming, wildlife viewing, and sightseeing as secondary activities.

Commercial Boat Tours and Fishing Guides

Commercial tours and guides operate throughout the Delta and provide fishing and sightseeing opportunities. There are guided fishing and charter opportunities throughout the Delta. Boat tours include cruises, private charters, and ecotours through different outfitters, some of which operate year-round (California Delta Chambers and Visitor's Bureau 2009a).

Land-Based Recreation Activities

Land-based activities are also provided in the Delta and include hunting, shoreline fishing, wildlife viewing, camping, picnicking, hiking and walking on trails, sightseeing, winery tours and festivals, and visiting historic sites.

Hunting

Private duck clubs, primarily in Yolo County, along with several state wildlife areas and one federal wildlife refuge, provide hunting opportunities in the Delta. Generally, hunting on land is for waterfowl and pheasant; hunting for rabbit, dove, and quail is also allowed at several of the state wildlife areas. A tule elk hunt is conducted at Grizzly Island Wildlife Area in Suisun Marsh. Hunting blinds are provided at Yolo Bypass Wildlife Area and Stone Lakes National Wildlife Refuge (NWR).

The designated hunting season for waterfowl is generally late October through January; for upland game birds such as pheasant, the season ranges from August through January, with opening and closing days varying each year by species, geographic zone and hunting method (California Department of Fish and Game 2011b; California Fish and Game Commission 2012). Licenses and duck or upland game stamps are required. CDFW administers the Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on state-owned lands on Twitchell and Sherman Islands. Hunting days, which typically are Wednesdays and Saturdays, totaled 13 days in 2008, including two junior hunt days and one women's hunt day (California Department of Fish and Game 2009a).

Shoreline Fishing

Public fishing piers and public parks in the Delta provide shoreline, or bank, fishing access. Some marinas also provide fishing piers. Shoreline anglers may gain access to Delta waterways at numerous locations along Delta roads (California Department of Parks and Recreation's Division of Boating and Waterways 2003). Striped bass is the most popular game species among shoreline anglers (California Department of Parks and Recreation 1997). Bank fishing is a year-round activity, with peak seasons varying by fish species. Other species, like crayfish and frogs, with limitations, can also be taken by hand, line, or trap with a valid fishing license.

Wildlife Viewing/Botanical Viewing/Nature Photography

Opportunities for birding and other wildlife viewing, as well as nature photography, are widespread throughout the Delta; however, only a few locations provide facilities for wildlife viewing. Most wildlife viewing is informal or is secondary to another activity (e.g., fishing, boating). The Delta is a critical stopover for migratory birds, which can be viewed and photographed at the Yolo Bypass Wildlife Area, Stone Lakes NWR, Cosumnes River Preserve, and Woodbridge Ecological Reserve, among other locations. Wildlife viewing and nature photography opportunities are available year-round in the Delta, although opportunities to see and photograph particular migratory bird species vary and generally occur in fall and spring. The arrival of overwintering sandhill cranes in the Delta each fall provides viewing opportunities on public and private lands, and special events and tours are held each year while the birds are present. Botanical viewing opportunities are available in spring at the Jepson Prairie Reserve, where hundreds of plant species have been identified. Delta Meadows River Park (DPR property) is among the last remnants of natural Delta uplands (California Watchable Wildlife 2009). According to the California Department of Parks and Recreation website at the time of the Draft EIR/EIS was prepared, some of the facilities at the Delta Meadows River Park are closed to the public and the park currently provides no visitor services. The park continues to serve as a preserve and remains a mooring site for boaters. (California Department of Parks and Recreation 2012a; California Department of Parks and Recreation 2012b).

Camping

Camping opportunities, including both tent and recreational vehicle (RV) camping sites, are available in the Delta, mostly at large public parks and private resorts and marinas. Some private resorts and marinas provide access to tenants and guests only, not the general public. Camping opportunities for the general public, including tent, RV and group sites, are available at a few public parks. In the past, Brannan Island State Recreation Area, offered boat-in camping, where a boat berth is accompanied by a land campsite. Due to park closures, however, this activity is no longer available until further notice. Camping is associated with general public recreational use of the Delta, particularly boating and fishing, and therefore peaks during summer.

Picnicking

The generally fair weather, potential for viewing wildlife, and scenic vistas make the Delta a setting for picnicking. Many public day-use areas and marinas throughout the Delta provide picnic sites. Some areas also offer group picnicking opportunities. Picnicking use is often combined with boating, fishing, swimming, and wildlife viewing because of the location of many picnic sites in the Delta along the water's edge. Picnicking, along with boating and fishing, is tied to general public use of the Delta and is higher in summer.

Hiking/Walking/Biking

Hiking, walking, and biking trail opportunities are fairly limited in the Delta, with only a few widely scattered trails available for hiking/walking, and only a few trails available along the shoreline in the Pittsburg, Antioch, and Oakley areas for hiking/walking and biking. The 6.5-mile Marsh Creek Trail is accessible from the Big Break Regional Shoreline in Oakley. Several Delta parks have short, paved walkways or footpaths; however, these are not considered "trails" for the purpose of this discussion. The Delta Protection Commission (DPC) is leading the planning process for the Great California Delta Trail System. The system will link the San Francisco Bay Trail and trails planned along the Sacramento River in Yolo and Sacramento Counties to present and future trails in and around the

Delta and along shorelines in several counties (Delta Protection Commission 2007). This includes the Mokelumne Coast to Crest Trail, which is anticipated to pass through the Delta (Mokelumne Coast to Crest Trail 2012). Trail use in the Delta occurs year-round.

Sightseeing

There are few formal facilities in the Delta specifically for sightseeing (i.e., signage, markers), so this activity typically is informal and self-led. Six recommended driving tours found on the California Delta Chambers and Visitor's Bureau website (California Delta Chambers and Visitor's Bureau 2009b) lead visitors past historic sites, sloughs, rivers, marinas, resorts, ferries, and bridges in all areas of the Delta. These driving tours combine travel and sightseeing on the main highways in the Delta (State Routes [SRs] 160, 12, and 4) with viewing sites on smaller roads along sloughs or across islands. The Sacramento County and Contra Costa County portions of SR 160 (River Road) are designated as State Scenic Highways (California Department of Transportation 2011; California Department of Transportation 2008; Cadd pers. comm.). The SR 4 Bypass from SR 160 near Antioch to SR 84 near Brentwood (about 9.5 miles) is eligible for designation as a State Scenic Highway (California Department of Transportation 2008). A 28-mile portion of SR 160 in Sacramento County is also designated as a County Scenic Highway (Sacramento County 2011:25). Scenic highway designations are discussed further in Chapter 17, *Aesthetics and Visual Resources*, Section 17.2.2.5.

Winery Tours and Festivals

The Delta produces about 25% of the wine grapes grown in California. While much of the crop is sold to winemakers in other regions, the Delta is becoming known for its own wines. Clarksburg and Lodi have established their own appellations and the Delta Farmer's Market in Isleton sells more than 300 varieties of Delta wines. The Delta's winery vineyards and tasting rooms have grown in popularity, with winery tours and festivals hosted in places like Clarksburg, Isleton, Lodi, and Rio Vista (California Delta Chambers and Visitors Bureau 2010a; Delta Farmer's Market 2011).

Visiting Historic Sites

The Delta has a long and varied history of human use and, therefore, has many historic sites, several of which are associated with legacy towns, such as Isleton, Locke, and Walnut Grove. (The term "legacy town" is applied to several small, historic towns along the Sacramento River in the Delta that were originally established as riverboat ports.) Self-guided walks, available in both Locke and Walnut Grove, take visitors past old sites and buildings, including residences, a market, gambling museum, blacksmith shop, butcher shop, and bank. Visitors can stop at historic sites in the Delta year-round. DPR and the Sacramento Housing and Redevelopment Agency have restored a former Chinese immigrant boarding house in Locke to preserve its history (Reyman Construction 2011). The project also includes a visitor's center and interpretative exhibits within the boarding house (Locke Foundation 2012).

Recreational Facilities in the Delta

Numerous recreational facilities throughout the Delta support participation in the wide variety of activities available (Figure 15-1). The following sections describe public recreation areas/facilities and privately owned recreational facilities for each Delta county. A summary of the public and private recreational facilities in each county is presented in Table 15-2. Additional details on the privately owned facilities, including name, type of facility, and amenities provided, are presented in Appendix 15A, *Privately Owned Recreation Facilities, by County*. Further county-specific information

about recreation in the Delta is located in Appendix 15B, *Delta Recreation,* and additional maps of existing recreational facilities in the Delta are included in Appendix 15C, *Additional Recreation Figures.*

Table 15-2. Summary of Public and Private Delta Recreational Facilities by County

Recreation Facility	Alameda	Contra Costa	Sacramento	San Joaquin	Solano	Yolo
Marinas[a]	1	47	31	31	3	5
Fishing Access	0	9	7	6	0	2
Hunting Areas	0	7	3	4	3	18
Public Boat Ramps[b]	0	3	5	5	0	1
Trail Access	0	2	3	2	0	1
Camping Areas[b]	0	0	5	2	0	0
Windsurf Access	0	0	5	0	0	0

Sources: Delta Protection Commission 1997, 2006.

[a] For the purposes of this summary, yacht clubs and sailing clubs are included in the marina totals.

[b] Some marinas also have a public-use ramp and/or recreational vehicle or tent camping areas available for a fee; those facilities are not included in the tallies of public boat ramps or stand-alone camping areas.

Alameda County

Only the northeastern corner of Alameda County extends into the Delta, south of Clifton Court Forebay. Delta waterways in the county include a short segment of Old River and an adjacent dead-end slough, where a single private marina is located.

Public Facilities/Areas

There are no public facilities/areas in the Alameda County portion of the Delta.

Private Facilities

Rivers End Marina & Storage, a private marina in Alameda County, provides dry storage facilities and a boat launch ramp in the Delta (Appendix 15A, *Privately Owned Recreation Facilities, by County*).

Contra Costa County

Contra Costa County includes the southwestern Delta, bounded by the San Joaquin River on the north and Old River on the east. Cities include Pittsburg and Antioch on the San Joaquin River and the communities of Oakley, Brentwood, and Discovery Bay south of the San Joaquin River.
The Contra Costa County portion of the Delta contains numerous public and private recreational facilities, including more than 40 marinas and yacht clubs, the largest of which provides several hundred berths. More than 20 private marinas and yacht clubs are on Bethel Island, making that area a focus for Delta boating activity.

Public Facilities/Areas

Antioch Dunes National Wildlife Refuge

Established in 1980, the Antioch Dunes NWR was the first refuge in the country to be established to protect endangered plants and insects. The refuge was closed to the public in 1986 to protect the refuge's endangered species and their habitats. The refuge is fenced, and public use is limited to monthly docent-led tours and educational tours given to groups upon request (U.S. Fish and Wildlife Service 2001; U.S. Fish and Wildlife Service 2011a).

Antioch Marina and Barbara Price Marina Park

The City of Antioch owns and manages a large marina on the San Joaquin River, approximately 3.25 miles west of the SR 160 Antioch Bridge. The 12.8-acre marina provides opportunities for boating and fishing, consisting of fishing piers, an observation pier, 310 berths, pump-out facilities, a fuel dock, a restaurant, a guest dock, and overnight berthing. The berthing facilities accommodate both powerboats and sailboats (City of Antioch 2012). Adjacent to the marina is the Barbara Price Marina Park, a city neighborhood park. The 7-acre park has picnic sites, a group picnic area, an exercise course, a tot lot, and shoreline fishing access (City of Antioch 2011).

Antioch Municipal Boat Ramp

The City of Antioch provides a public boat launching facility east of Rodgers Point. The site includes a boat ramp, fishing pier, and parking area (City of Antioch 2003).

Antioch/Oakley Regional Shoreline

EBRPD's Antioch/Oakley Regional Shoreline Park is near the SR 160 bridge in Antioch. A 550-foot fishing pier, constructed from the old SR 160 bridge piers, enhances shoreline fishing opportunities on the San Joaquin River. A fish cleaning station and 10 picnic sites are also provided in the park (East Bay Regional Park District 2008a; East Bay Regional Park District 2004).

Big Break Regional Shoreline

EBRPD owns and manages Big Break Regional Shoreline—1,648 acres along the San Joaquin River in the City of Oakley (California State Coastal Conservancy 2007). Since adopting the Big Break Regional Shoreline Land Use Plan in 2001, EBRPD has been developing portions of the site in phases. A 40-acre upland area, a former agricultural parcel with a mosaic of habitats, was chosen as the site for an environmental education project. EBRPD designated two Recreation Units on the site (totaling 12 acres of long-abandoned asparagus fields) for interpretive exhibits, trails, an observation platform, a picnic area, a pier, and a small boat launch ramp. A parking lot, an access road, restrooms, and a fishing and observation pier were completed first; the Delta Discovery Area then opened in the summer of 2011, adding a covered amphitheater seating 150, and a three-dimensional in-ground sculpture of the Delta (California State Coastal Conservancy 2007; Delta Science Center 2009; East Bay Regional Park District 2012a; R. Gehlke pers. comm.). The Delta Science Center is a partner with EBRPD and provides environmental education and interpretation at the site. The Delta Science Center is a nonprofit collaboration of educators, scientists, and representatives from agriculture, industry and government (cities of Oakley, Brentwood, Antioch, and Pittsburg; EBRPD; Pacific Gas and Electric Company; and the Sierra Club, among others) (California State Coastal Conservancy 2007; Delta Science Center 2009).

A visitor center for Big Break Shoreline, opened in October 2012, houses visitor information, exhibits, and the Delta Science Center office and laboratories (R. Gehlke pers. comm.).

Big Break Regional Trail

The recently completed Big Break Regional Trail runs along the southern edge of Big Break Regional Shoreline from the north end of the Marsh Creek Regional Trail in the east to Big Break Road, providing access to Brentwood and Oakley. The 3-mile multi-use trail is paved and has a rest stop. At the western (Oakley) end of Big Break Regional Trail, a 0.25-mile path connects to the Delta Discovery Area (East Bay Regional Park District 2012a; R. Gehlke pers. comm.).

Browns Island Regional Preserve

Browns Island lies at the confluence of the Sacramento and San Joaquin Rivers, north of the city of Pittsburg. The 595-acre island is owned and managed by EBRPD. There are no recreational facilities on the island, and access is arranged by appointment only (East Bay Regional Park District 2008b).

Clifton Court Forebay

Clifton Court Forebay is located at the SWP Harvey O. Banks Pumping Plant and is managed by the California Department of Water Resources (DWR). Motorized boating, camping, and swimming are not allowed at the forebay. However, bank fishing takes place at the southern end where vehicle access is permitted. Hunting is allowed on Wednesdays, Saturdays, and Sundays during designated seasons for waterfowl (California Department of Fish and Game 2011a). There are no recreational facilities at the forebay.

Franks Tract State Recreation Area

Franks Tract State Recreation Area, just north of Bethel Island, occupies two flooded islands, Franks Tract and Little Franks Tract. No recreational facilities are in the State Recreation Area, and both flooded islands are accessible only by boat. Recreation opportunities in the State Recreation Area include fishing, boating, and waterfowl hunting (on part of the open water) (California Department of Parks and Recreation 2012c).

Jersey Island

Fishing, hiking, and pheasant hunting are allowed by the Ironhouse Sanitary District (ISD) on its Jersey Island property, although users must obtain a Jersey Island Public Use Pass (and parking pass if needed) from ISD. Fishing is available year-round, and hiking is available year-round except during pheasant hunting season. A short trail, the Halsey Trail, is on the north side of the island from the ferry landing west along the San Joaquin River (Ironhouse Sanitary District 2009).

Marsh Creek Regional Trail

EBRPD's Marsh Creek Regional Trail runs along Marsh Creek in eastern Contra Costa County, from the Delta shores of Big Break south to Creekside Park in Brentwood. The paved, multiuse trail is 6.5 miles long. Plans exist to extend the trail to 14 miles, connecting the Delta to Morgan Territory Regional Preserve and Round Valley Regional Park east of Mount Diablo State Park (East Bay Regional Park District 2008c).

Rhode Island Wildlife Area

The Rhode Island Wildlife Area consists of a 67-acre island located in Old River between Holland Tract and Bacon Island. It provides habitat for rivers otters, beavers, muskrats, and birds such as ducks, herons, and egrets, among others. The wildlife area is accessible only by boat and provides opportunities for fishing, wildlife viewing, and waterfowl hunting (California Department of Fish and Game 2009b; California Department of Fish and Game 2011b). Though the public can access this area, no facilities are provided.

Riverview Park

The City of Pittsburg provides waterfront access to the Sacramento River at the 4-acre Riverview Park (City of Pittsburg 2004). The park provides opportunities for picnicking and shoreline fishing and has footpaths and several picnic sites.

Private Facilities

There are 41 marinas, four yacht clubs, one duck club, one hunting club, and one fishing access site in Contra Costa County. All the marinas have boat berths for long-term storage. There are 19 small marinas (fewer than 50 berths), 15 medium marinas (50 to 200 berths), and 7 large marinas (more than 200 berths). About one-third (15) of the marinas provide a launch ramp, and 12 marinas provide campsites. Six marinas also offer waste pump-out facilities and four provide picnicking areas. One marina also provides fishing access, and one offers houseboat rentals. One of the yacht clubs provides boat berthing and fuel facilities; however, the other three yacht clubs, the duck club, and the hunting club do not provide any facilities. The fishing access site provides only a fishing pier.

Sacramento County

A narrow strip of Sacramento County, between the Sacramento River and Steamboat Slough on the west and between the San Joaquin and Mokelumne Rivers on the east, extends across the northern, central, and western portions of the Delta. This area includes a string of small historic towns on the Sacramento River: Courtland, Hood, Isleton, Locke, Ryde, and Walnut Grove. Numerous private and public recreational facilities are located in this portion of the Delta. These include more than 30 marinas and a yacht club, about half of which are concentrated on Andrus Island in an area commonly referred to as the "Delta Loop," and which together account for more than 1,800 boat berths. The county is also home to one of the largest public parks in the Delta, Brannan Island State Recreation Area.

Public Facilities/Areas

Brannan Island State Recreation Area

Brannan Island State Recreation Area, just south of the City of Rio Vista, is on the northern side of Threemile Slough and occupies a peninsula between the slough and the Sacramento River from the SR 160 bridge to Sevenmile Slough. Activities available in the State Recreation Area include camping, picnicking, boating, fishing, and swimming. Facilities include a 10-lane boat ramp, visitor center, group picnic area, day-use area, swim beach, fishing pier, more than 140 campsites, 13 RV sites with boat berths, and an RV rally area (California Department of Parks and Recreation 2011a; California Department of Parks and Recreation 2011b). Additional State Recreation Area day-use facilities and windsurfing access at Windy Cove are on the western side of SR 160, across from the main portion of the park (California Department of Parks and Recreation 2012d). However, DPR implemented

service reductions at Brannan Island State Recreation Area in May 2011 because of budget reductions. In June 2012, some of those restrictions were removed and camping and day use are available 7 days per week and the boat launch remains open every day. Delta Meadows and Windy Cove parking areas and restrooms are closed. Windy Cove, the RV rally area, and Group Camp remain closed. Delta Meadows River Park guided canoe tours are no longer offered (California Department of Parks and Recreation 2011a).

Cliffhouse and Georgiana Slough Fishing Access

These small shoreline fishing access sites are provided by Sacramento County. Cliffhouse Fishing Access offers parking, picnic sites, and shoreline access to the Sacramento River. This site is for fishing and clamming and is also used for windsurfing access (SacramentoRiver.org 2009a). Georgiana Slough Fishing Access provides picnic sites and shoreline access to Georgiana Slough and is also used for hand launching small boats (SacramentoRiver.org 2009b).

Cosumnes River Preserve

The 45,859-acre Cosumnes River Preserve consists of lands owned by the U.S. Bureau of Land Management (BLM), CDFW, DWR, Ducks Unlimited, Sacramento County, State Lands Commission, and The Nature Conservancy (the largest landholder), as well as lands held in conservation easement (Cosumnes River Preserve 2008). The preserve was created to restore and protect the Cosumnes River and the surrounding landscapes including the valley oak riparian forest and freshwater seasonal wetland habitat communities (Cosumnes River Preserve 2009a; Cosumnes River Preserve 2009b).

The preserve provides "non-consumptive" recreation activities such as bird watching, photography, nature study, hiking, and canoeing/kayaking (Cosumnes River Preserve 2009c). A few specially designated areas have been set aside for limited hunting. Fishing is only allowed from a boat and with the proper license. In order to limit disturbance to the wildlife and habitat within the preserve, recreation opportunities and public access are concentrated around the visitor center, which houses interpretive displays, interactive educational exhibits, and a picnic area. The visitor center is open and staffed by volunteers on Saturdays and Sundays and is often open during the weekdays, but hours vary depending upon staff availability. The visitor center provides information on the preserve's self-guided driving tour, which travels public roads adjacent areas of the Cosumnes River Preserve that are not accessible by the public (i.e., they are only accessible only by guided tours or are privately owned) (Cosumnes River Preserve 2009d). From the center, visitors can access the 3-mile Cosumnes River Walk Trail, located on levees that pass through different habitats, and the 1-mile Lost Slough Wetlands Walk Trail, which tours through marshes and wetlands (Cosumnes River Preserve 2009e, 2012a). The two trails are open to the public every day of the year from sunrise to sunset. Other areas of the Preserve are not open to self-guided tours. There is no public fishing access at the preserve, although boat fishing (with appropriate permits and licenses) is allowed in the Cosumnes River main channel and sloughs accessible from the Mokelumne River. Limited waterfowl hunts for youth and mobility-impaired hunters have been allowed in the Cougar Wetland; however, hunting in the rest of the preserve is only allowed by boat on the river and sloughs (Cosumnes River Preserve 2009f). The preserve has a courtesy boat dock south of the visitor parking lot for paddle boats only (Cosumnes River Preserve 2012b).

Delta Meadows River Park

Delta Meadows River Park is behind the town of Locke, along Railroad Slough. Delta Meadows was acquired to protect one of the last remnants of natural conditions in the Delta before Euro-American settlement. It is primarily undeveloped, although a road passes through the parcel along Railroad Slough. A 1-mile footpath on the old railroad levee parallel to the road provides walking/hiking opportunities, although the property has been officially closed since May 2011 because of state budget constraints. Canoe tours that used to be offered twice daily on Saturdays and Sundays during spring and fall are no longer available. Boating and fishing opportunities in the area are still available (California Watchable Wildlife 2009; California Department of Parks and Recreation 2011a; California Department of Parks and Recreation 2012b).

Garcia Bend Park

The City of Sacramento manages the 24-acre Garcia Bend Park on the Sacramento River. Facilities include a boat ramp with trailer parking and a courtesy dock, three soccer fields, two tennis courts, three picnic sites, a tot lot, and four senior and disabled fitness equipment stations (City of Sacramento 2011).

Hogback Island Access

Hogback Island Access is a Sacramento County park that provides boating, fishing, and picnicking opportunities along Steamboat Slough near the small town of Ryde. Facilities include a picnic area and lagoon with a dock and boat launch (Sacramento County Regional Parks 2010a).

Isleton and Walnut Grove Courtesy Docks

The towns of Isleton and Walnut Grove both provide courtesy docks along the Sacramento River for boaters to temporarily tie up while visiting the towns.

Lower Sherman Island Wildlife Area

A 3,115-acre marshland in the Lower Sherman Island Wildlife Area lies at the confluence of the Sacramento and San Joaquin Rivers, accessible only by boat (California Department of Fish and Game 2009c). The primary recreational activities at the wildlife area are fishing and hunting, although other recreation activities include wildlife viewing, photography, and powered and nonpowered boating. Waterfowl hunting is the primary hunting activity in the wildlife area; hunting for upland game also is permitted (California Department of Fish and Game 2011b). Fishing occurs year-round in the wildlife area; the site is known for striped bass, largemouth bass, and catfish (California Department of Fish and Game 2007a). There are no recreational facilities.

Sherman Island Public Access Facility

The Sherman Island Public Access Facility on the Sacramento River is managed by Sacramento County and provides opportunities for fishing, picnicking, windsurfing, kiteboarding, boating, and camping. A few picnic facilities, a boat launch, and launch sites for windsurfing, kiteboarding, or other small craft are available to the public (SacramentoRiver.org 2009c; California Department of Fish and Game 2007a). The site is used for fishing, and both shoreline and boat fishing opportunities are available. RV and tent camping are also allowed (California Department of Fish and Game 2007a).

Stone Lakes National Wildlife Refuge

The Stone Lakes NWR receives more than 6,000 visitors annually to participate in docent guided hikes, guided paddle trips, bird watching, special events and education tours for schools and civic groups. There is no indoor visitor's center within the refuge. A public waterfowl hunting program consists of land- and water-accessible blinds with an emphasis on opportunities for youth and wheelchair-dependent visitors. The hunting program is open to the public and is located within the refuge's Sun River Unit. There is no fishing within the refuge. Docent guided hikes occur from October through May and are open to the public. Self-guided access within the refuge is only found at the Blue Heron Trails. The Blue Heron Trails are open to the public year-round and offer one mile of trails focusing on environmental education and native habitats. The refuge also offers a guided Canoe & Kayaking Wildlife Observation Program during the months of June through September (Friday, Saturday, and Sunday) within Lower Beach Lake. This area is normally restricted to public access when guided tours are not offered. The refuge also hosts the annual *Walk on the Wildside* outdoor festival event in May. The public event is held on Saturday at the Beach Lake Preserve Picnic Area and celebrates the International Migratory Bird Day (U.S. Fish and Wildlife Service 2007a; U.S. Fish and Wildlife Service 2007b).

Private Facilities

Private facilities in Sacramento County include 31 marinas, 3 camping areas, and 1 boat ramp. All of the marinas have boat berths for long-term storage. The marinas include 12 small marinas (fewer than 50 berths), 14 are medium size (50 to 200 berths), and 5 are large (more than 200 berths). Sixteen of the marinas provide campsites, and many provide picnicking opportunities (13), a launch ramp (12), and waste pump-out facilities (10). A few of the marinas provide fishing access (4) or a fishing pier (3). One marina also provides cabins. The camping facilities collectively offer fishing access, guest docks, a ramp, a pump-out facility, a beach, and picnicking opportunities. The private boat ramp also provides an area for dry storage. Appendix 15A, *Privately Owned Recreation Facilities, by County,* Table 15A-1 summarizes the recreational facilities for private use in Sacramento County.

San Joaquin County

San Joaquin County encompasses a large area of the eastern and southern Delta, east of the Mokelumne and Old Rivers. The county includes the cities of Lathrop, Stockton, and Tracy at the margins of the Delta and the San Joaquin River as it crosses this part of the Delta. Although recreational facilities are scattered on various waterways throughout the county, including more than 30 marinas and yacht clubs, most of the facilities are in or near Stockton. The largest marinas contain more than 700 berths. There are also several private clubs located on channel islands in the vicinity of Stockton, and several public launch ramps in Stockton and on the San Joaquin River to the south.

Public Facilities/Areas

Buckley Cove Park and Louis Park

The City of Stockton manages Buckley Cove and Louis Parks, 53 and 74 acres, respectively. Both parks have boat launches and pier fishing; Buckley Cove Park provides boat access to the San Joaquin River Deep Water Ship Channel, and Louis Park provides boat access to the Smith Canal (City of Stockton 2011a). Buckley Cove Park also has a few picnic sites and a children's play area.

Louis Park has footpaths; picnic sites, including two group picnic areas; and facilities for tennis, softball, baseball, and handball (City of Stockton 2008).

Calaveras River Bike Path

The 7.43-mile Calaveras River Bike Path runs from Buckley Cove to Cherokee Road in the City of Stockton (City of Stockton 2011b).

Dos Reis Regional Park

Dos Reis Regional Park is located on the San Joaquin River and is managed by the County. Camping, boating, fishing, and day-use opportunities are available, with facilities that include 26 RV campsites with hookups, showers, a boat ramp, a picnic area, and a children's play area. Tent camping is also available (San Joaquin County 2008a).

Grupe Park and Legion (American) Park

Grupe Park on Fourteenmile Slough, and Legion Park on Smith Canal, are both City of Stockton local parks, each roughly 20 acres. Both parks provide several picnic sites, a tot lot, fishing opportunities, and at least one multiuse sports facility. Grupe Park also provides a group picnic area and facilities for tennis, softball, baseball, and handball (City of Stockton 2008).

McLeod Park, Weber Point Park, and North and South Seawalls

The contiguous McLeod Park, Weber Point Park, and the North and South Seawalls cover a total of about 16 acres at the terminus of the Stockton Deep Water Ship Channel and are managed by the City of Stockton. The parks have been featured in the ongoing renovation of the downtown Stockton waterfront and provide paved promenades along the water. Weber Point Park is the centerpiece and provides an outdoor event center where concerts and festivals are held (City of Stockton 2011c).

Morelli Park

The City of Stockton's Morelli Park, on the Stockton Deep Water Ship Channel, includes a four-lane boat launch and other new amenities. Dry stack boat storage is planned (City of Stockton 2008).

Mossdale Crossing Regional Park

San Joaquin County manages Mossdale Crossing Regional Park on the San Joaquin River south of Lathrop. The park provides a boat ramp, fishing opportunities, five picnic sites, and one playground (San Joaquin County 2008b).

Westgate Landing Regional Park

San Joaquin County manages the 15-acre Westgate Landing Regional Park on the Mokelumne River. The park provides camping, fishing, picnicking, and boating opportunities. It has 14 campsites (RV and tent, but no hookups), 1 fishing pier, 9 picnic sites, and 24 boat slips available for overnight docking (San Joaquin County 2008c).

White Slough Wildlife Area

White Slough Wildlife Area consists of 880 acres of designed ditches, canals, marshes, grasslands, riparian habitat, and nine ponds that were created during the construction of Interstate 5 (I-5). The wildlife area, west of Lodi and north of Stockton, provides opportunities for fishing, hiking, and

wildlife viewing. Hunting opportunities are also available from September 1 through January 31, specifically for pheasant, quail, dove, and waterfowl (California Department of Fish and Game 2009d; California Department of Fish and Game 2011b).

Woodbridge Ecological Reserve

Woodbridge Ecological Reserve, also known as the Isenberg Sandhill Crane Reserve, consists of two parcels of land west of I-5 that provide opportunities for viewing migratory sandhill cranes. The southern parcel is open to the public, and a seasonal 2-hour, docent-led crane tour begins at this location, continuing to the northern parcel, where a parking lot, restroom, and crane viewing blind are provided. The northern parcel can be visited only on these tours. Crane tours usually are available the first three weekends of each month from October to February (California Department of Fish and Game 2009e). In addition to guided tours during October and November, CDFW now sponsors the Lodi Sandhill Crane Festival in the fall (Lodi Sandhill Crane Association 2011).

Private Facilities

Twenty-one private marinas, nine yacht clubs, three duck clubs, and one sailing club are located in San Joaquin County. Twenty of the marinas provide boat berths for long-term storage. The marinas include seven small (fewer than 50 berths), nine medium (50 to 200 berths), and five large (more than 200 berths). Over half of the marinas provide a launch ramp (13) and waste pump-out facilities (11), and many also provide campsites (9) and picnicking opportunities (7). Five of the marinas in San Joaquin County also provide houseboat rentals. One marina provides dry storage and fuel facilities. The sailing club and two of the yacht clubs provide boat berthing facilities. The other seven yacht clubs and all three duck clubs do not provide any amenities.

Appendix 15A, *Privately Owned Recreation Facilities, by County,* Table 15A-1 summarizes the recreational facilities for private use in San Joaquin County.

Solano County

Solano County encompasses a portion of the northwestern Delta, west of the Sacramento River, and includes the Cache and Lindsey Slough complex north of Rio Vista. The City of Rio Vista on the Sacramento River is outside of, but immediately adjacent to, the statutory Delta, with the boundary defined by the river in that area. Recreational facilities are not numerous, but several public parks with boat launching facilities and a large private marina in the Rio Vista area provide recreational access to the Delta.

The 116,000-acre Suisun Marsh is east of Interstate 680 (I-680), south of SR 12, north of Suisun and Grizzly Bay, and west of the statutory Delta. The marsh provides natural wetlands and habitat for hundreds of species and is located along the Pacific Flyway; thus, the marsh is an outstanding place for bird watching, wildlife viewing, and waterfowl hunting. The marsh offers opportunities for fishing, hiking, and boating (California Department of Water Resources 2011). It includes two public wildlife areas, one public ecological reserve, one public open space area, and many private duck clubs. There are few developed public recreation facilities in the marsh; most developed facilities are at the Rush Ranch Open Space Area and the Grizzly Island Wildlife Area.

The total estimated annual recreation use of Suisun Marsh is about 130,000 user-days, about half of which is attributed to waterfowl hunting at the numerous private duck clubs (Delta Vision 2007). Each season, the Grizzly Island Wildlife Area Complex hosts 7,000–8,000 waterfowl hunters (California Department of Fish and Game 2010a); more than 1,000 pheasant hunters; and up to 100

elk, rabbit, and pig hunters. The manager of the complex has estimated more than 45,000 user-days of fishing activity in the marsh (two-thirds in the wildlife area), and more than 12,000 user-days of recreational activity are attributed to nonhunting and fishing activities such as wildlife viewing and dog training, nearly all of which occur in the wildlife area (Delta Vision 2007).

Public Facilities/Areas

Hill Slough Wildlife Area

The 1,723-acre Hill Slough Wildlife Area is just south of SR 12 along Grizzly Island Road (California Department of Fish and Game 2008a). The wildlife area contains a complex of marshes, sloughs, and grassland that supports mammals, raptors, and a large variety of waterfowl. The only activities allowed in this wildlife area are bird watching and wildlife viewing; hunting is not permitted. There are no recreation facilities in the wildlife area.

Peytonia Slough Ecological Reserve

South of SR 12 and west of the Hill Slough Wildlife Area is the Peytonia Slough Ecological Reserve (California Department of Fish and Game 2007b). The reserve can be accessed only by boat from Suisun Slough; the nearest public launch is the Suisun City Boat Ramp. Fishing (including fishing from boats), wildlife viewing, and hiking are permitted activities. Restrooms facilities and graveled foot trails are provided.

Rush Ranch Open Space

Rush Ranch is located 2 miles south of SR 12 on Grizzly Island Road. This 2,070-acre marsh and grassland area on the northeastern side of Suisun Marsh provides opportunities for recreation and education for thousands of visitors each year (Solano Land Trust 2010a). Recreation opportunities include hiking, wildlife viewing, and bird watching; educational opportunities include visiting the nature center, the Kit House museum, and visitor center. Visitors can also participate in one of the monthly events held at the site, which include volunteer improvement day, blacksmith demonstrations, horse-drawn wagon rides, and interpretive walks (Solano Land Trust 2010a; Solano Land Trust 2010b; Rush Ranch Educational Council 2010). Facilities at the ranch include three self-guided trails, a nature center, and a museum and visitor center. Facilities available for rent at the ranch include a meeting room, picnic/barbeque area, and a fully furnished two-bedroom guest quarters (Solano Land Trust 2010b).

Grizzly Island Wildlife Area

The 15,300-acre Grizzly Island Wildlife Area is a complex of 10 distinct parcels or units, most of which are not connected and are surrounded by private property (California Department of Fish and Game 2010b). The 10 units are located throughout most of Suisun Marsh south of the Hill Slough Wildlife Area and Peytonia Slough Ecological Reserve (California Department of Fish and Game 2009f). The largest unit is the Grizzly Island Unit, which contains most of the wildlife area's facilities and receives much of the hunting use.

The Grizzly Island Wildlife Area provides opportunities for hiking, fishing, wildlife viewing, bird watching, photography, dog training, and hunting. Facilities in the wildlife area include levee trails, parking areas, restrooms, fishing piers, a wildlife-viewing platform, and hunting blinds (California Department of Fish and Game 2010b; California Department of Fish and Game 2010c; California Department of Fish and Game 2010a). The Grizzly Island Unit has a 7.5-mile self-guided tour along

Grizzly Island Road with stops at the nine parking areas that provide access to the many levee trails in the unit (California Department of Fish and Game 2010c). Fishing is allowed at the Grizzly Island Unit, Island Slough Unit, and Belden's Landing, which is north of the Island Slough Unit on Montezuma Slough and includes a boat launch facility (California Department of Fish and Game 2010d; Solano County 2012). In the wildlife area, hunting for a variety of species, including waterfowl, dove, pheasant, tule elk, and rabbit, is allowed; however, the different units in the wildlife area have different hunting regulations (California Department of Fish and Game 2010a). Special hunts in the wildlife area include a junior pheasant hunt and two tule elk hunts (one adult and one apprentice). General public use of the wildlife area is not allowed during the tule elk hunts and during the waterfowl hunting season (California Department of Fish and Game 2010e).

Calhoun Cut Ecological Reserve

Calhoun Cut Ecological Reserve, on the far western edge of the Delta, provides fishing and waterfowl hunting. Access to the reserve is by boat only via Lindsey Slough to Calhoun Cut Slough (California Department of Fish and Game 2009g). There are no recreational facilities in the reserve.

Decker Island Wildlife Area

The 35-acre Decker Island Wildlife Area, south of Rio Vista, constitutes the northernmost end of Decker Island along the Sacramento River. The wildlife area is accessible only by boat and provides opportunities for wildlife viewing and hunting (as regulated by CDFW) (California Department of Fish and Game 2009h; California Department of Fish and Game 2011b). No recreational facilities are provided in the wildlife area.

Jepson Prairie Preserve

At the far western edge of the Delta, native bunchgrass prairie and vernal pools are protected in the Jepson Prairie Preserve. The Solano Land Trust owns the preserve, and the University of California, Davis supports reserve management. Visitors can participate in docent-guided walks past vernal pool and prairie habitat to glimpse some of the more than 400 plant species in the preserve. Walks are provided on weekends from March through May. No other public recreational activities or facilities are in the preserve (University of California Davis 2009).

Miner Slough Wildlife Area

Miner Slough Wildlife Area is 37-acres and consists of a small island and narrow peninsula where only 10 acres are above high tide. Located at the confluence of Miner Slough and Cache Slough, the wildlife area is accessible only by boat and includes excellent riparian vegetation that supports shorebirds, waterfowl, raptors, and beavers. Bird watching, wildlife viewing, and fishing are allowed. Hunting for waterfowl is allowed during open season. There are no recreation facilities in the wildlife area (California Department of Fish and Game 2010f).

Private Facilities

Private facilities in Solano County are two marinas, one yacht club, and one hunting club. Both of the marinas have boat berths for long-term storage and are of medium size (50–200 berths). A launch ramp and picnicking opportunities are available at both marinas. One of the marinas also has campsites and a fishing pier. The yacht club provides only a dock. The hunting club provides pheasant and chukar partridge hunting on 4,700 acres of land (Gamebirdhunts.com 2009) and also offers camping and fishing.

Suisun Marsh has historically been a popular duck hunting location; around 1880, the first private duck clubs were established in the marsh, and by 1930, the primary use of Suisun Marsh was waterfowl hunting (California Department of Water Resources 2000:3–4). Duck hunting continues to be a use of Suisun Marsh, with 158 private duck clubs located over 52,000 acres in the marsh. These clubs are managed for waterfowl habitat; the wetlands are flooded to coincide with waterfowl season (California Department of Water Resources 2009a; California Department of Water Resources 2011). The one licensed game bird club in Suisun Marsh, the Suisun Marsh Hunting Preserve, released domestically reared game birds to provide additional hunting opportunities; however, this operator did not renew its license in 2011 (G. De La Rosa pers. comm.).

Yolo County

Yolo County encompasses much of the northern Delta west of the Sacramento River. The Sacramento River Deep Water Ship Channel crosses from north to south through this portion of the county, and the Yolo Bypass occupies the area west of the ship channel. Water-based recreational facilities of the type found throughout most of the other Delta counties are relatively few. The most numerous facilities are the 17 private duck hunting clubs in the vicinity of the Yolo Bypass.

Public Facilities/Areas

Clarksburg Fishing Access

Clarksburg Fishing Access, owned and managed by Yolo County, provides a boat ramp, parking, and bank access for boating, waterskiing, and fishing activities. The facility occupies a 3.9-acre shelf of land inside the Sacramento River levee (Yolo County 2009).

Yolo Bypass Wildlife Area

The Yolo Bypass Wildlife Area, owned and operated by CDFW, is in the northwestern Delta along the Sacramento River Deep Water Ship Channel. (A small portion of the wildlife area north of Interstate 80 (I-80) is outside the statutory Delta.) It is a public waterfowl and pheasant hunting area, with duck blinds and parking areas. Fishing occurs primarily at the East Toe Drain and along Putah Creek. The wildlife area also provides wildlife viewing and photography opportunities. There is an automobile tour route for viewing, and the 16 miles of trails in the wildlife area can be used for viewing and walking/hiking. The Yolo Basin Foundation conducts many educational and interpretive programs in the wildlife area, including the Discover the Flyway school program, Flyway Nights lectures, tours of the wildlife area, a vernal pool open house, bat tours, and the California Duck Days wetland festival (California Department of Fish and Game 2008b).

Fremont Weir Wildlife Area

The Yolo Bypass constitutes a floodway for the Sacramento River when the river water level is high. The water spills over at the Fremont Weir into the Yolo Bypass at the 1,461-acre Fremont Weir Wildlife Area. Although no facilities are in the wildlife area, there are opportunities for fishing, bird watching, and wildlife viewing. Hunting is allowed during spring turkey season and daily from July 1 through January 31. Game species found in the wildlife area include pheasant, quail, dove, rabbit, waterfowl, deer, and wild turkey (California Department of Fish and Game 2010g).

Sacramento Bypass Wildlife Area

The Sacramento Bypass Wildlife Area is an element of the Yolo Bypass just north of I-80. The 360-acre wildlife area provides valuable cover and feeding grounds for wildlife, particularly during late fall, winter, and early spring. Fishing in the Tule Canal, wildlife viewing, and bird watching are allowed in the wildlife area. Hunting is also allowed between September 1 and January 31. Game species in the wildlife area include waterfowl, pheasant, and dove. No recreation facilities are in the wildlife area (California Department of Fish and Game 2010h).

Private Facilities

The Yolo County portion of the Delta contains seventeen duck clubs, four marinas, and one yacht club. All the marinas and the yacht club have boat berths for long-term storage. One of the marinas provides a launch ramp, and one offers camping and picnicking opportunities. The yacht club has waste pump-out facilities. The yacht club and two of the marinas are small (fewer than 50 berths) and the remaining three are medium (50–200 berths).

Recreation Users in the Delta

According to the Delta Boating Needs Assessment (California Department of Parks and Recreation's Division of Boating and Waterways 2003), 75% of surveyed boat owners who had recently boated in the Delta lived within 75 miles of the Delta. This area is referred to as the *Primary Market Area* and consists of 13 counties: Alameda, Calaveras, Contra Costa, Marin, Napa, Sacramento, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, and Stanislaus. The next largest source of boaters who use the Delta is referred to as the *Secondary Market Area* and represents an additional 10% of Delta boaters. The Secondary Market Area consists of the following 14 counties: Amador, Colusa, El Dorado, Lake, Mariposa, Mendocino, Merced, Monterey, Placer, San Benito, Sonoma, Sutter, Tuolumne, and Yolo (California Department of Parks and Recreation's Division of Boating and Waterways 2003).

Recreation Participation

The two dominant recreation uses in the Delta have historically been fishing and boating. The results of the *Sacramento-San Joaquin Delta Outdoor Recreation Survey*, which evaluated recreation use and recreation user characteristics, showed that boating and fishing were among the most popular recreation uses at that time (California Department of Water Resources 1980:5, 6, 7, 74). Of the individual visitors surveyed, 47.6% participated in boating and 47.6% also participated in fishing (these estimates are not additive as the survey responses could include multiple activities by each respondent). For groups visiting the Delta who participated in the survey, fishing was the highest rated activity with 28.2% reporting participation fishing (these respondents were not asked about participation in boating or camping activities). For residents using the Delta for recreation uses, results for individuals also showed highest participation in fishing (69.1%) and boating (68.1%), and resident groups identified fishing as the highest (24.7%)(these respondents were not asked about participation in boating or camping activities). Other popular activities in which respondents from the four survey groups reported participating in during their visits to the Delta included relaxing, driving for pleasure, sightseeing, swimming, and water skiing (California Department of Water Resources 1980:75–78). Estimates of recreation use in the Delta from a 2002 study (Plater and Wade 2002), which used 1997 as the baseline year, reinforce that recreational boating and fishing are two of the main Delta recreation activities. The study estimated that total 1997 Delta recreation use consisted of almost 6.4 million visitor-days (Table 15-3). Almost 75% of

this total recreation use was attributed to boating, with 16% attributed to fishing. Day use, which for this study encompassed all other nonboating and fishing activities, accounted for the remaining 10% of total recreation use in 1997. Camping was not treated as a primary activity in the development of these estimates but rather as a secondary activity most often associated with boating and fishing (Plater and Wade 2002).

The Delta Boating Needs Assessment (California Department of Parks and Recreation's Division of Boating and Waterways 2003), from which the previous Delta use estimates were taken, used statewide boater surveys conducted for the assessment to estimate a total of 6.4 million boating-related visitor-days in the Delta for the baseline year 2000. The survey data also were used to estimate peak-single day visitation in 2000 of approximately 25,000 visitors. Peak-day activity for small boats was estimated to be approximately 7,800 trips and for large boats approximately 600 trips.

Table 15-3. Estimates of Boating, Fishing, and Day Use in the Delta

Activity	Visitor-Day[a] Use Estimate (1997)[c]
Boating	4.71 Million
Fishing (from shore and by boat)	1.00 Million
Day Use[b]	0.66 Million
Total Annual Recreation Use	6.37 Million

Source: Plater and Wade 2002

[a] A visitor-day is equivalent to 12 hours of recreation activity. This activity may represent one visitor recreating for 12 hours or more than one visitor recreating for shorter periods.

[b] Day use includes all nonboating or fishing activities.

[c] At the time the Draft EIR/EIS was prepared, there was no data more current than 1997.

Hunting was described above as a seasonally popular activity in the Delta. Most public hunting use in the statutory Delta occurs at the Yolo Bypass Wildlife Area, with more than 6,000 people participating in the 2008–2009 season. Additional hunting activity occurs during more limited, reservation-only hunts on the DWR lands of Sherman and Twitchell Islands and at Stone Lakes NWR (Table 15-4). In addition to the Yolo Bypass Wildlife Area, CDFW allows hunting at several other small wildlife areas in the Delta where no special permits or reservations are required; no hunter use data are available for these locations.

Table 15-4. Hunting Participation in the Delta at Select Public Hunting Locations

Location	Number of Hunters Participating (2008–2009 Season)
Yolo Bypass Wildlife Area	6,077
Sherman and Twitchell Islands	142
Stone Lakes NWR	190

Sources: California Department of Fish and Game 2010a; U.S. Fish and Wildlife Service 2009.

Although recreational activities occur year-round in the Delta, the most use occurs in summer. The 1996 survey of Delta boaters indicated that June, July, and August were the months with the greatest boating activity; the month with the least boating activity was December. The 1996 survey of Delta anglers indicated that May, June, and July were the most popular months for fishing, closely followed

by August and September (California Department of Parks and Recreation 1997). Concentrations of recreation activity in the Delta often are related to special events. The most common of these events are bass fishing tournaments, which occur year-round but are particularly prevalent during spring and early summer. As an example, Russo's Marina near Oakley hosts a bass tournament nearly every weekend throughout spring and summer. In a large bass tournament, participation can be as high as several hundred anglers.

The number of sturgeon fishing tournaments are less numerous; however, an annual 2-day tournament hosted by a Bay Point marina has been attended by more than 1,000 anglers in recent years (Burgarino 2009). A 1996 survey indicated that nearly half of tournament fishing occurs in the western portion of the Delta and that nearly all the remainder occurs in the eastern and central Delta (California Department of Parks and Recreation 1997). The city of Rio Vista, on the Sacramento River, hosts a 3-day bass derby with a carnival, parade, and other activities each October. This event is among the annual community-hosted events in the Delta that draw heavy boat traffic to these communities (Table 15-5).

Table 15-5. Annual Community-Based Delta Recreation Events

Month	Events/Locations
February	Isleton Chinese New Year celebration
April	Asparagus Festival (Stockton) Opening day boat parades (Bethel Island and numerous other locations throughout the Delta)
June	Cajun Festival
July	Fireworks shows (Antioch, Pittsburgh, Rio Vista, and other locations) Wimpy's Annual Poker Run (Walnut Grove Area) Courtland Pear Fair
August	Walnut Grove Catfish Jubilee Bethel Island 50's Bash
September	Delta Big Dog Poker Run Delta Blues Festival Antioch Riverfront Jamboree
October	Rio Vista Bass Festival

Source: SacDelta.com 2012.

Numerous fireworks shows and other events are sponsored by Delta towns and marinas each Fourth of July (SacDelta.com 2012), and many hundreds of boats congregate at favored anchoring locations during that holiday weekend.

The Economic Sustainability Plan for the Sacramento-San Joaquin Delta (Delta Protection Commission 2012:167) provides a summary of actual visitation numbers to several Delta recreation sites. This information is presented below in Table 15-6.

Table 15-6. Summary of Actual Visitation to the Delta

Site	Number
Brannon Island SRA (day use, 2009)	88,459
Brannon Island SRA (camping, 2009)	36,069
Delta Meadows State Park (day use, 2009)	18,933
Delta Meadows State Park (camping, 2009)	2,155
Franks Tract SRA	24,305
Stone Lakes National Wildlife Refuge (USFWS) (approx.)	7,000
Stone Lakes National Wildlife Refuge (USFWS) (approx.)	7,000
Cosumnes River Preserve (approx.)	70,000
Lower Sherman Island (CDFW) (approx.)	5,000
White Slough Wildlife Area (CDFW) (approx.)	12,000
Yolo Bypass Wildlife Area (USFWS) (approx., includes student tours)	30,000
Sherman Island (Sacramento County)	25,000
Hogback Island Fishing Access (Sacramento County)	10,800
Clarksburg Boat Launch (Yolo County)	1,713
Belden's Landing (Solano County)	15,642
Sandy Beach Park (Solano County)	100,611
Dos Reis Park (San Joaquin County)	25,815
Mossdale Crossing Regional Park (San Joaquin County)	23,630
Oak Grove Regional Park (San Joaquin County)	84,058
Westgate Landing (San Joaquin County)	10,283
Isleton Crawdad Festival (approx.) [a]	200,000
Rio Vista Bass Derby and Festival (approx.)	12,000
Totals	796,480

Source: As cited from personal communication with DPR in 2010 in Delta Protection Commission 2012.

[a] Isleton Crawdad Festival and Rio Vista Bass Derby and Festival are not analyzed as recreation sites in this chapter.

Recreation Participation Trends and Projections

The most recent analyses available predicted steady growth in Delta recreation participation over the past decade (2000–2010), and continued, but slowing, growth in the next decade (2010–2020), although boat registrations have not reflected this trend. The Delta Boating Needs Assessment (California Department of Parks and Recreation's Division of Boating and Waterways 2003) identified a projection of 6.4 million boating-related visitor-days in 2000, and projected that annual visitation would increase at the rate of 0.79% per year from 2000 to 2010 (no published data are available to establish whether the 2010 use projections were realized) and at the rate of 0.46% per year from 2010 to 2020 to reach 8.1 million annual boating-related visitor-days by 2020 (Table 15-7). As discussed in the Existing Conditions section, the number of registered boats in the Primary Market Area counties fell 5.3% between 2002 and 2009. Boats originating in the Primary Market Area account for more than 75% of Delta boating trips (California Department of Parks and Recreation's Division of Boating and Waterways 2003), which suggests that predicted boating activity increases for the period 2000–2010 have not occurred.

Table 15-7. Delta Boating-Related Recreation Participation Projections

Period	Projected Growth (Visitor-Days)	Projected Participation (Visitor-Days)
2000 (base year)	Not applicable	6.4 million
2000–2010	Annual growth: 50,500 (0.79%) Total growth: 1.0 million (15.8%)	7.4 million (2010)
2010–2020	Annual growth: 34,100 (0.46%) Total growth: 0.7 million (9.2%)	8.1 million (2020)

Source: California Department of Parks and Recreation's Division of Boating and Waterways 2003.

15.1.1.2 Description of Existing Conditions in the Upstream of the Delta Region

Recreation conditions in the Upstream of the Delta Region at SWP and CVP reservoirs and associated waterways that supply water to the Delta are considered because the action alternatives may have operational effects on these upstream components of the SWP and CVP. DWR and Reclamation operate the SWP and the CVP, respectively, to divert, store, and convey SWP and CVP water consistent with applicable laws and contractual obligations. The SWP and CVP reservoirs (from north to south) include Trinity Lake (also referred to as Claire Engle Lake), Shasta Lake, Whiskeytown Lake, Lake Oroville, Folsom Lake, New Melones Lake, San Luis Reservoir, and Millerton Lake. The corresponding SWP and CVP waterways are the Trinity River downstream of Lewiston Dam, the Sacramento River downstream of Keswick Dam, the Feather River downstream of Lake Oroville, the American River downstream of Folsom Lake, the Stanislaus River downstream of New Melones Lake, and the San Joaquin River downstream of Friant Dam.

DWR maintains and operates the SWP to store water and distribute it to urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. The SWP facilities are also operated to improve water quality in the Delta, control Feather River flood waters, provide recreation, and enhance fish and wildlife (California Department of Water Resources 2010).

The CVP was originally authorized by the Rivers and Harbors Act of 1935. The CVP was reauthorized by the Rivers and Harbors Act of 1937 for the purposes of "improving navigation, regulating the flow of the San Joaquin River and the Sacramento River, controlling floods, providing for storage and for the delivery of stored waters.' The CVP was reauthorized in 1992 through the Central Valley Improvement Project (CVPIA), which modified the 1937 Act and added mitigation protection and restoration of fish and wildlife as a project purpose. Further, the CVPIA specified that the dams and reservoirs of the CVP should now be used "first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and fish and wildlife enhancement."

See Chapter 5, *Water Supply*, Section 5.1.2, for additional information about the management and operation of these reservoirs.

Recreational Activities and Opportunities Upstream of the Delta, New Melones Lake and San Luis Reservoir

The SWP and CVP water storage facilities provide substantial opportunity for recreational activities throughout the year. The reservoirs provide on-water boating and angling opportunities in addition to shoreline angling, camping, and day uses. These facilities release flows to the downstream rivers, which also support boating, angling, and shoreline activities. Figure 15-2 identifies recreational facilities upstream of the Delta.

Reservoirs

Trinity Lake, Shasta Lake, and Whiskeytown Lake are central features of the Whiskeytown-Shasta-Trinity National Recreation Area (NRA), established by Congress in 1965 to provide for public outdoor recreation use and enjoyment, among other purposes (USDA Forest Service 1996).

Folsom Lake, New Melones Lake, and Millerton Lake are also CVP reservoirs; Lake Oroville is the primary storage reservoir for the SWP. San Luis Reservoir serves both the SWP and CVP. Each of these water bodies, except New Melones Lake, and the surrounding lands has been designated as a State Recreation Area.

Trinity Lake

The 19-mile-long Trinity Lake is the focus of the Trinity Unit of the Whiskeytown-Shasta-Trinity NRA, managed by the U.S. Department of Agriculture Forest Service (USDA Forest Service). Water-based recreation opportunities on the reservoir include fishing, houseboating, swimming, and waterskiing; land-based opportunities include wildlife viewing, hiking, picnicking, and camping. Of the 145 miles of shoreline at the lake, developed facilities are concentrated primarily along the shoreline of the Stuart Fork Arm. Recreation facilities include numerous campgrounds (tent, RV, boat-in), picnic areas, boat ramps, resorts, and marinas. Lewiston Lake, also part of the Trinity Unit, is located just south of Trinity Dam and is 7 miles long and much narrower and colder than Trinity Lake. Several recreation facilities located along the western side of Lewiston Lake support recreation opportunities such as camping, fishing, wildlife viewing, bird watching, and boating (USDA Forest Service 2012a).

Shasta Lake

Shasta Lake is the largest reservoir in California, with 29,500 surface acres when full. The U.S. Forest Service manages the lake and surrounding lands as the centerpiece of the Shasta Unit of the Whiskeytown-Shasta-Trinity NRA. Water-based recreation is the main attraction, and boating is the predominant recreation activity at the lake.

The lake is used year-round for a wide variety of boating and related activities, such as both warmwater and coldwater fishing, and has gained a reputation as a premier houseboating destination. Campers have a choice of more than a dozen public campgrounds and designated shoreline camping areas and a similar number of private campgrounds and RV parks offered at several resorts and marinas on or near the lake (USDA Forest Service 1996). Shasta Lake is bisected by I-5, which provides easy access in 4 hours or less travel time for more than 5 million residents of southern Oregon and northern California, including the urban populations of Sacramento and the San Francisco Bay Area. Single-day peak-season boating use levels as high as 1,400 boats have been recorded in recent years (Graefe et al. 2005).

Whiskeytown Lake

Whiskeytown Lake is 8 miles west of Redding and is a main feature of the National Park Service-managed Whiskeytown Unit of the Whiskeytown-Shasta-Trinity NRA. The lake provides 36 miles of shoreline and 3,200 surface acres for a variety of water-based recreation opportunities, such as swimming, scuba diving, kayaking, canoeing, rowing, fishing, sailing, waterskiing, and powerboating (personal watercraft are prohibited) (National Park Service 2011a). Recreation facilities at the lake include boat launches, campgrounds, fishing piers, picnic areas, and beaches. The area adjacent to the lake includes many primitive campsites and trails for hiking, mountain biking, and horseback riding (National Park Service 2011b).

Lake Oroville

Lake Oroville is near the City of Oroville, at the confluence of the North, South, and Middle forks of the Feather River, about 75 miles north of Sacramento, and covers 15,500 surface acres at full pool. Lake Oroville is the primary storage reservoir for the SWP. The lake is the focus of Lake Oroville State Recreation Area, which is managed by DPR (California Department of Parks and Recreation 2008a). There are recreation facilities around the lake: two full-service marinas, five larger and several smaller (car-top) boat launch ramps, three family campgrounds and several boat-in camps, an equestrian campground, and ten floating campsites (California Department of Parks and Recreation 2008a). Recreation facilities also are located at the Lake Oroville Visitors Center and at the Thermalito Forebay and Afterbay, both offstream regulating reservoirs downstream of Lake Oroville. The facilities at Lake Oroville State Recreation Area support a wide variety of recreational opportunities, including powered and nonpowered boating, warmwater and coldwater fishing, developed and primitive camping, picnicking, swimming, horseback riding, hiking, and mountain biking. Visitor information sites offer cultural and informational displays about the developed facilities and the natural environment (California Department of Parks and Recreation 2008a).

Folsom Lake

Folsom Lake, and its associated dam is owned and managed by the Bureau of Reclamation. The facility, 25 miles east of Sacramento, at the confluence of the North and South forks of the American River, is a water management facility/flood control structure protecting the Sacramento metropolitan area. With 75 miles of shoreline and 10,000 surface acres of water (California Department of Parks and Recreation 2010a; California Department of Parks and Recreation 2010b), it is the focus of the Folsom Lake State Recreation Area and recreation and lands surrounding the reservoir that are managed by DPR for Reclamation. The State Recreation Area provides some recreation facilities, primarily around the southern portion of the lake. It has two swimming areas, seven boat launches, two small-boat launches, four picnic areas, and one marina at the lake, in addition to two campgrounds (California Department of Parks and Recreation 2010c) and eighty miles of trails adjacent to the lake (California Department of Parks and Recreation 2010b) in the Folsom Lake State Recreation Area.

New Melones Lake

New Melones Lake is owned and managed by Reclamation; it was constructed in the late 1970s and provides 100 miles of shoreline and 12,500 surface acres of water. New Melones Reservoir is operated primarily for purposes of water supply, flood control, power generation, fishery enhancement, and water quality improvement in the lower San Joaquin River. The reservoir also provides recreation benefits. Two developed recreation areas at the reservoir provide three boat

launches, five campgrounds, two group camps, six day-use areas, and one marina. Also located at the reservoir are hiking and biking trails, as well as a visitor center and museum that provide information on prehistoric and historic use of the Stanislaus River area (Bureau of Reclamation 2012).

San Luis Reservoir

The 12,700-acre San Luis Reservoir is the largest offstream reservoir in the United States (Bureau of Reclamation and California Department of Parks and Recreation 2005) and is part of the San Luis Joint-Use Complex. San Luis Reservoir is jointly managed by DWR and Reclamation and serves both the SWP and CVP. The reservoir provides flood protection for San Luis Canal, Delta-Mendota Canal, City of Los Banos and other downstream developments. The reservoir is fed by the California Aqueduct and the Delta Mendota Canal via O'Neill Forebay (California Department of Parks and Recreation 2011c). The reservoir and forebay are in the San Luis Reservoir State Recreation Area, managed by DPR. Strong winds at the 2,250-acre O'Neill Forebay provide excellent windsurfing opportunities. Winds in excess of 30 mph require boaters to stop use of the reservoir because of hazardous conditions. Recreation opportunities at the reservoir and forebay include camping, picnicking, hiking, fishing, swimming, and boating. Two recreation sites at both water bodies provide boat launches, day-use areas, and campgrounds (California Department of Parks and Recreation 2011c). Two adjacent wildlife areas provide hunting and hiking opportunities, and an off-highway vehicle (OHV) area near O'Neill Forebay provides motorized recreation opportunities.

The San Luis Reservoir State Recreation Area is open year round. Boat access is available by a boat ramp at the Basalt area at the southeastern portion of the reservoir and at Dinosaur Point at the northwestern portion of the reservoir. The boat ramp at Basalt becomes difficult to use because of low reservoir levels at elevation 340 feet; the boat ramp at Dinosaur Point is difficult to access at elevation 360 feet (San Joaquin River Group 1999:3-116). There are no designated swimming areas or beaches at San Luis Reservoir, but O'Neill Forebay has swimming, boating, fishing, and camping opportunities. At Romero Overlook there is a popular SWP Visitors Center, easily accessible off of SR 152.

A few miles to the southeast lies Los Banos Reservoir, also part of San Luis Reservoir State Recreation Area, which is managed by State Parks. Los Banos is known primarily for its fishing opportunities, although boating, swimming, and camping opportunities are also available. Los Banos Reservoir has a horse camp and hiking and equestrian trails (Bureau of Reclamation and California Department of Parks and Recreation 2005).

Waterways

Trinity River Downstream of Lewiston Dam

The Trinity River from Lewiston Dam downstream to the confluence with the Klamath River at Weitchpec is designated as a federal and California wild and scenic river that runs through private lands, BLM, and U.S. Forest Service (Shasta-Trinity and Six Rivers National Forests) lands, as well as the Hoopa Valley Indian Reservation (Wild and Scenic Rivers Council 2011). SR 299, which follows the river through the Trinity River Gorge west of Junction City, is a designated scenic byway and provides access to the river's recreation facilities (Trinity County 2007; Bureau of Land Management 2012; USDA Forest Service 2012b). The Trinity River is well known for its salmon and steelhead fishing and its whitewater boating opportunities, with the river waters ranging in difficulty from

Class I to Class V (Trinity River Rafting 2011). Access points are provided along the river, as well as campgrounds and day-use areas (Bureau of Land Management 2012; USDA Forest Service 2012c).

Sacramento River Downstream of Keswick Dam

The Sacramento River corridor is a recreation resource for the northern California region and hosts a wide range of recreation uses, including walking/hiking, angling, camping, hunting, horseback riding, picnicking, sports activities, boating (motorized and nonmotorized), and wildlife watching. There are many federal, state, local, and commercial facilities along the river corridor that provide access to the river and riverbanks and support the recreational activities mentioned above. Facilities along the river include boat launches, trail accesses, fishing accesses, RV parks, wildlife areas, undeveloped open space areas, parks, marinas, and trails. Facilities are primarily located from Keswick Dam south to the Bidwell-Sacramento River State Park, near Chico (about 115 river miles downstream from Shasta Dam). From Chico to the northern limit of the statutory Delta at Sacramento (about 140 river miles downstream of Chico), recreational facilities are more widely spaced and fewer in number, although access to the river is available at several federal, state, and local facilities (SacramentoRiver.org 2012).

Feather River Downstream of Lake Oroville

Below Lake Oroville, the Feather River runs through the Oroville Wildlife Area and the communities of Gridley, Live Oak, Yuba City, and Marysville before joining the Sacramento River approximately 70 miles below Lake Oroville at Verona. Recreation activities along the lower Feather River include fishing, boating, hunting, camping, swimming, wildlife viewing, and picnicking. The several miles of river near Oroville and the Oroville Wildlife Area are renowned for trout and salmon fishing (Neville 2008). Recreation facilities along this stretch of the Feather River include public and private launch ramps, day-use facilities, camping facilities, and trails (City of Marysville 2012a; Yuba County 2009; Sutter County 2012). Riverfront Park in Marysville also offers a golf driving range, OHV course, bicycle motocross (BMX) track, soccer and softball fields, a nature area, and a pavilion (City of Marysville 2012b).

American River Downstream of Folsom Lake

Most of the first 6 miles of the American River below Folsom Lake is occupied by Lake Natoma, formed by Nimbus Dam, a downstream regulating reservoir (California Department of Parks and Recreation 2010a) for Folsom. Park lands surrounding Lake Natoma are included in the Folsom Lake State Recreation Area, managed by DPR (California Department of Parks and Recreation 2010b). Lake Natoma and the surrounding lands provide opportunities for waterskiing, sailing, windsurfing, rowing, canoeing, kayaking, swimming, fishing, and picnicking. Facilities at three sites on the lake include boat launches, picnic areas, a group camping area, a fishing platform, and a swimming area (California Department of Parks and Recreation 2010c; California Department of Parks and Recreation 2010d). Motorized boating is allowed (with a 5-mph speed limit), but Lake Natoma is best known for nonmotorized boat recreation. At the downstream end of Lake Natoma, the Sacramento State Aquatic Center provides the general public with boating and water safety classes and summer camp and youth programs. The center is a cooperative operation of the Associated Students Inc. of California State University, Sacramento, the University Union of Sacramento State, the California Department of Parks and Recreation's Division of Boating and Waterways (CDBW), and DPR. The center is a regional boating instruction safety center and rents

canoes and kayaks, other types of nonmotorized watercraft, and cruiser bicycles (Sacramento State Aquatic Center 2012a; Sacramento State Aquatic Center 2012b).

The 23-mile American River Parkway encompasses the entire stretch of the American River from Nimbus Dam to the Sacramento River confluence (Sacramento County Regional Parks 2010b; Sacramento County Regional Parks 2010c). The parkway is administered by the Sacramento County Department of Parks and Recreation. Approximately 8 million people visit this recreation area each year, participating in activities such as fishing, boating, rafting, picnicking, walking, biking, swimming, horseback riding, and wildlife viewing (Sacramento County Regional Parks 2008; Sacramento County Regional Parks 2010b). Parks and access points are located along the parkway (Sacramento County Regional Parks 2010c; Sacramento County Regional Parks 2010d). The Jedediah Smith Memorial Trail, a 32-mile paved trail that extends the length of the parkway and Lake Natoma, links many of the parkway's facilities and access points (Sacramento County Regional Parks 2010c).

Discovery Park is at the west end of the American River Parkway next to and under I-5. The park's 302 acres at the confluence of Bannon Slough and the Sacramento and American Rivers in downtown Sacramento offer a boat launch with access to both rivers, a bike trail, a softball field, an archery range, fishing access, playground, picnic tables, reservable picnic areas with grills, and restrooms. Natural and altered riparian and open-water habitats provide opportunities for birding, wildlife observation, and photography. Discovery Park is accessible by car from I-5 and Garden Highway (American River Parkway Foundation 2009; Sacramento County Regional Parks 2010e).

Stanislaus River Downstream of New Melones Lake

Immediately downstream of New Melones Lake is Tulloch Lake, which is surrounded primarily by private property other than two public RV campgrounds and two marinas. Approximately 2 miles downstream of Tulloch Lake is Goodwin Dam and the beginning of the 58.3-mile reach of the Stanislaus River from Goodwin Dam to the confluence with the San Joaquin River, which is commonly referred to as the Lower Stanislaus River. Although access to the 4-mile stretch of river below Goodwin Dam and Knights Ferry is limited, this segment is used by whitewater boaters (intermediate to expert level) and fisherman and flows through a scenic volcanic gorge. Public river access can be found just below Goodwin Dam, 2 miles downstream at Two Mile Bar, and at Knights Ferry (The Ecological Angler 2008; U.S. Army Corps of Engineers 2010), a historic gold mining-era town. Class I–II rafting (suitable for novice paddlers) is available below Knights Ferry, with floaters taking out at the Orange Blossom covered bridge, 7 miles downstream, or 6 miles farther downstream at Oakdale (American Whitewater 2012). Commercially guided rafting trips are offered on the runs downstream of Knights Ferry (River Journey 2012; Sunshine Rafting Adventures 2010).

In addition to providing the river access sites mentioned above, the U.S. Army Corps of Engineers (USACE) provides other small riverside recreation areas between Knights Ferry and Oakdale and a free visitor center at Knights Ferry. These parks provide campsites, picnic areas, and hiking trails. Little river access is available downstream of Oakdale, with the exception of small USACE access sites adjacent to the communities of Riverbank and Myers and a municipal park in the community of Ripon. A few miles upstream of the confluence with the San Joaquin River is Caswell Memorial State Park, a 258-acre park that offers activities such as camping, picnicking, swimming, fishing, tubing from the campground to the day-use area, bird watching, and hiking (California Department of Parks and Recreation 2010e).

San Joaquin River Downstream of Friant Dam

Recreational activities in and along the San Joaquin River downstream of Friant Dam and at Millerton Lake are limited and not always on public lands. Activities include fishing, boating, nature interpretation and education, trail use, camping, hunting, picnicking, and wildlife viewing/nature observation. The San Joaquin River Parkway is a mosaic of parks, trails, and ecological reserves located along the San Joaquin River between Friant Dam and SR 145 and managed by the San Joaquin River Parkway and Conservation Trust (San Joaquin River Conservancy 2000; San Joaquin River Conservancy 2010; San Joaquin River Parkway and Conservation Trust 2012). Use of the parkway is heaviest in summer, and a user survey estimated that the parkway received more than 200,000 visits in 2000, mostly from trail users (Houser and North 2001).

Most of the recreation on the river between Friant Dam and the Merced River occurs in the parkway because this reach provides public land and river access and developed facilities. Downstream of the parkway, recreation is possible in the river and adjacent to the river in some areas; however, some reaches have been dewatered at most times, and only limited recreation opportunities are available. The San Joaquin River Restoration Program, which is a direct result of a settlement reached in September 2006 to provide sufficient fish habitat in the San Joaquin River below Friant Dam, calls for an intermittent release of water from Friant Dam that provides flows along the entire length of the San Joaquin River. The first water release was in October 2009, with interim flow releases scheduled through February 2013. One of the goals of the Program, through the release of water, is to restore and maintain fish populations including naturally reproducing and self-sustaining populations of Chinook salmon and other fish. The water releases also provide increased downstream recreational opportunities. Future phases of the program call for permanent releases (restoration flows) from Friant Dam. Full restoration flows are scheduled to start no later than January 1, 2014.

The Mendota Pool, near the community of Mendota, contains water year-round and is accessible to the public via a county park (City of Mendota 2010). Other use of the river or riverbed in these reaches is assumed to be by adjacent private landowners and possibly other local residents, and may include fishing, hunting, and OHV use. The reach of the river just upstream of the confluence with the Merced River crosses units of the San Luis NWR that offer hunting and fishing opportunities (U.S. Fish and Wildlife Service 2010).

Two Stanislaus County parks provide the only developed recreation access to this segment of the San Joaquin River. The Las Palmas Fishing Access, a few miles east of Patterson, is a 3-acre park that provides a concrete boat ramp and day-use facilities (Stanislaus County 2010). Laird Park, 2 miles east of Grayson, is a 97-acre “community park” that provides river access and day-use facilities (Stanislaus County n.d.). As of July 2011, Las Palmas and three other fishing accesses were closed, restrooms and trash receptacles removed and maintenance services discontinued (Stanislaus County Department of Parks and Recreation 2011).

The West Hilmar Wildlife Area, on the western bank of the river a few miles downstream of the Merced River confluence, is a 340-acre State Wildlife Area. It has no facilities and is accessible only by boat (California Department of Fish and Game 2010i). The San Joaquin River NWR is located along the San Joaquin River between the Tuolumne and Stanislaus Rivers, two tributaries to the San Joaquin River. The refuge boundaries encompass more than 7,000 acres of riparian woodlands, wetlands, and grasslands. Although the refuge is primarily undeveloped, a wildlife-viewing platform has been constructed at a favored location for viewing geese and other waterfowl. The 3.8-mile

Pelican Nature Trail with interpretive kiosks and picnic areas opened in 2011 (U.S. Fish and Wildlife Service 2011b).

Recreation Users Upstream of the Delta

As previously described, the reservoirs upstream of the Delta are large, and most are the central features of federally designated or state-designated recreation areas that provide a variety of public and commercial recreation facilities. Some of these reservoirs are among the largest lakes in the state as measured by surface area. The large areas available for water-based and water-related recreation, and the associated large-scale recreation facilities, allow these areas to host large numbers of visitors each year. Each of these seven upstream reservoirs and the surrounding recreation areas host from nearly 0.5 million to more than 2 million visitors each year. Table 15-8 provides a summary of annual attendance at these locations.

Because of the length of the waterways downstream of the reservoirs and the variety of public and private ownership, access, and recreation development on those waterways, recreation use data are not available. However, these waterways are used for boating, fishing, and other water-based and water-related recreation opportunities and are among the most popular waterways in the state for the pursuit of these activities.

Table 15-8. Annual Attendance at Reservoirs in the Upstream of the Delta Region

Location	Approximate Annual Attendance (Visitors/Visitor-Days[a])
Shasta and Trinity Units of Whiskeytown-Shasta-Trinity NRA	1.45 million visitor-days
Whiskeytown Unit of Whiskeytown-Shasta-Trinity NRA	750,000 visitors
Lake Oroville State Recreation Area	750,000 visitors
Folsom Lake State Recreation Area	2 million visitors
New Melones Lake	500,000 visitor
San Luis Reservoir State Recreation Area	475,000 visitors

Sources: USDA Forest Service 1996; National Park Service 2009; California Department of Parks and Recreation 2002; California Department of Parks and Recreation 2010c; Bureau of Reclamation 2012; Bureau of Reclamation and California Department of Parks and Recreation 2005; Springer, Personal communication 2013.

NRA = National Recreation Area

[a] A visitor-day is equivalent to 12 hours of recreation activity. This activity may represent one visitor recreating for 12 hours or more than one visitor recreating for shorter periods, for a total of 12 hours.

15.2 Regulatory Setting

15.2.1 Federal Plans, Policies, and Regulations

15.2.1.1 New Melones Lake Area Final Resource Management Plan

The Bureau of Reclamation (Reclamation) released the New Melones Lake Area Final Resource Management Plan in early 2010, superseding the 1976 New Melones Lake Area Master Plan. Two of the purposes for the Resource Management Plan are (1) to provide for recreation management and

development and ensure that recreation facility management and opportunities are compatible with other resources, and (2) to ensure that planning is based on public need and the ability of land and water resources to accommodate increased visitor use and enhanced facilities. The plan is aimed at balancing "management of recreation uses and resources with management of natural and cultural resources." The alternative involves increasing watercraft use, moderately updating the amount of facility and access area, improving trails, and developing a long-term strategy for managing hunting (Bureau of Reclamation 2010). The Resource Management Plan also identifies goals and implementation strategies, including the following recreation-related goals.

General Recreation

- **Goals:** Provide for diverse recreation within Reclamation's authorities to afford a safe and quality recreation experience consistent with natural and cultural resource management objectives. Achieve fair value for recreation. Ensure that concessions are planned, developed and managed to meet public needs, are compatible with the natural and cultural resources, and provide a variety of services which are consistent with authorized project purposes.

Aquatic Recreation

- **Goals:** Provide a diverse range of water-based recreation opportunities suited to user needs compatible with the existing character of the lake and surrounding lands. Protect cultural resources, natural resources, and water quality while providing safe and enjoyable recreational experiences.

Land-Based Recreation

- **Goals:** Provide a diverse range of land-based recreation opportunities suited to user needs compatible with the existing character of the project lands. Protect cultural and natural resources while providing safe and enjoyable recreational experiences. Provide specific recreation opportunities and adequate, flexible, and efficient support facilities under varying lake level conditions without compromising ecological resources. Provide a variety of nonmotorized recreational experiences using trails and pathways. Provide safe recreational hunting opportunities compatible with the Wildlife Management Plan, while respecting private property rights and management authority over wildlife resources.

Interpretive Services

- **Goals:** Enhance the public's understanding of the history, purpose, and operation of the project and its archaeological, historical, human-made, natural, and cultural features. Enhance recreation experiences through the Visitor's Center, interpretive services, and volunteer programs. Enhance the quality of recreation for all visitors, including those with physical, sensory, and cognitive impairments. Educate the public about Reclamation, water resources, water conservation, and water safety. Promote stewardship, achieve management objectives, optimize resources, provide enhanced services, and provide educational opportunities.

15.2.1.2 Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan

The Stone Lakes NWR Comprehensive Conservation Plan (U.S. Fish and Wildlife Service 2007a) provides management guidance for visitor use and natural resources (e.g., fish, wildlife, plants) within the refuge for the next 15 years. The approved refuge boundary encompasses more than

17,000 acres of land; USFWS manages approximately one-third of that land, including state- and county-owned land managed under cooperative agreements. Most of the remaining lands are privately owned and are not managed as part of the refuge, although some lands are publicly owned and managed for conservation purposes. The conservation plan identifies goals, objectives, and strategies only for the lands that are currently, or soon to be, managed by USFWS, regarding habitat restoration and enhancement and protection of cultural resources. One goal aims to provide visitors with wildlife-dependent recreation, education, and interpretation opportunities that help them develop an understanding of the unique wildlife and habitat in the refuge. Objectives of this goal include recruiting volunteers, constructing visitor facilities, developing an environmental education program that includes two interpretation programs, providing boat-only fishing and day-use parking, and continuing to expand the outreach program. Proposed facilities to be developed include two photography blinds, restrooms, trails, parking areas, and wildlife-viewing platforms, as well as a boat-accessible haul-out site and boat launch. An objective of the cultural resource protection goal also includes developing a minimum of two interpretive panels and exhibits.

The plan includes the following recreation-related goal and objectives.

- **Goal 3:** Provide visitors with recreation, interpretation, and education opportunities that foster an understanding of the refuge's unique wildlife and plant communities in an urban setting.
    - **Objective 3.E:** Within five years, the refuge will provide safe, boat-only fishing with day-use parking facilities to accommodate approximately 20 boats on South Stone Lake and approximately 10 boats on SP Cut from June through September.

15.2.1.3 Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area

The purpose of the 1996 Shasta-Trinity NRA management guide (USDA Forest Service 1996) is to integrate past decisions that remain pertinent for managing the Shasta and Trinity units of the NRA with standards, guidelines, and management prescriptions incorporated from the April 1995 Shasta-Trinity National Forest Land and Resource Management Plan (Shasta-Trinity LRMP). (Management of the Whiskeytown unit of the NRA, administered by the NPS, is not addressed in the guide; see Section 15.2.1.4.) The Shasta-Trinity LRMP (USDA Forest Service 1995) is a program-level document that establishes integrated land management direction, including time frames for implementing, monitoring, and evaluating projects, activities, programs, and budgeting in the Shasta-Trinity National Forest for a period of 10–15 years. The NRA management guide provides an analysis of direction from the Shasta-Trinity LRMP; a summary of existing conditions; a description of desired future conditions; and a strategy of management recommendations, opportunities, and mitigation measures that will be used to implement the Shasta-Trinity LRMP and achieve the desired results. The topic of recreation is broken into a series of key subtopics in the management guide: boating and lake management, land-based recreation, special uses, recreation occupancy vessels (i.e., houseboats and similar vessels), and resort/marina standards and guidelines.

15.2.1.4 General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area

The General Management Plan for the Whiskeytown unit of the Whiskeytown-Shasta-Trinity NRA (National Park Service 1999) provides recreation-related goals and action programs that emphasize providing a range of water-related activities in a predominantly natural setting, improving

backcountry experiences, improving visitor safety, and providing additional interpretation and education opportunities. The plan also outlines a park-wide zoning system. The following goals in the plan relate to recreation.

Public Enjoyment and Visitor Experience

- **Goal 1:** Visitors to Whiskeytown Lake enjoy a wide range of water-based and water-related activities, including the opportunity to enjoy a predominantly natural setting.
- **Goal 2:** Visitors to the backcountry enjoy a variety of activities, including camping, driving for pleasure, trail activities, and hunting using an integrated network of designated backcountry roads and trails.

15.2.1.5 Boat Navigation Jurisdiction, Rules, and Regulations

U.S. Coast Guard

While boating law enforcement is often performed at the local level by local agencies such as county sheriff and municipal marine patrols, the Coast Guard and other federal regulators have enforcement authority in federally navigable waters. Title 14 of the United States Code (USC), Code of Federal Regulations (CFR) Title 33 and other portions of the CFR, give the U.S. Coast Guard authority for maritime law enforcement on the navigable waters of the United States, as well as responsibilities for search and rescue, marine environmental protection, and the maintenance of river aids to navigation, among other roles. Included within the Coast Guard's authority are inland waters, which are those waters shoreward of the territorial sea baseline, as defined within Title 33, Part 2. Furthermore, Title 33, Part 162—Inland Waterways Navigation Regulations, Section 162.205 addresses Suisun Bay, San Joaquin River, Sacramento River, and connecting waters within which the Coast Guard has authority and jurisdiction. Specific to the Delta, 33 CFR 162 provides regulations for the navigation by both commercial and noncommercial vessels on the San Joaquin River Deep Water Ship Channel (between Suisun Bay and Stockton) and the Sacramento River Deep Water Ship Channel (between Suisun Bay and West Sacramento).

15.2.2 State Plans, Policies, and Regulations

15.2.2.1 Delta Protection Act and Delta Protection Commission Land and Resource Management Plan

The Delta Protection Act of 1992 (Act) (California Public Resources Code Section 21080.22, Division 19.5) established the DPC, a state entity to plan for and guide the conservation and enhancement of the Delta's natural resources while sustaining agriculture and meeting increased recreational demand. The Act defines a Primary Zone, which comprises the principal jurisdiction of the DPC. The Secondary Zone is the area outside the Primary Zone but within the "Legal Delta;" the Secondary Zone is not in the planning area of the DPC. The DPC has appeal authority over local government actions in the Delta's Primary Zone.

Chapter 1 of the Act (Findings and Declarations) includes the following sections.

- Section 29702 indicates that the basic goals of the state for the Delta include the protection, maintenance, and, where possible, the enhancement and restoration of the overall quality of the

Delta environment, including, but not limited to, agriculture, wildlife habitat, and recreational activities.

- Section 29705 indicates that the Delta's wildlife and wildlife habitats are valuable, unique, and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations.
- Section 29710 declares that agricultural, recreational, and other uses of the Delta can best be protected by implementing projects that protect wildlife habitat before conflicts arise.
- Section 29712 acknowledges that the Delta's waterways and marinas offer recreational opportunities of statewide and local significance, are a source of economic benefit to the region, and that public safety requirements will heighten because of increased demand and use.

Chapter 5 of the Act (Resource Management Plan) requires DPC to prepare and adopt a "comprehensive long-term resource management plan for land uses within the primary zone of the Delta." DPC completed the Land Use and Resource Management Plan for the Primary Zone of the Delta in 1995. In February 2010, after 2 years of collaborative effort to revise the plan, DPC adopted a new draft Land Use and Resource Management Plan that includes the following recreation and access policies (Delta Protection Commission 2010:22–23).

- **Policy P-1:** Ensure appropriate planning, development, and funding for expansion, ongoing maintenance, and supervision of existing public recreation and access areas.
- **Policy P-2:** Encourage expansion of existing privately-owned, water-oriented recreation and access facilities that are consistent with local General Plans, zoning regulations, and standards.
- **Policy P-3:** Assess the need for new regional public and private recreation and access facilities to meet increasing public need, and ensure that any new facilities are prioritized, developed, maintained, and supervised consistent with local, state, and federal laws and regulations. Ensure that adequate public services are provided for all existing, new, and improved recreation and access facilities.
- **Policy P-4:** Encourage new regional recreational opportunities, such as Delta-wide trails, which take into consideration environmental, agricultural, infrastructure, and law enforcement needs, as well as private property boundaries. Also, encourage opportunities for water, hiking, and biking trails.
- **Policy P-5:** Encourage provision of publicly funded amenities such as picnic tables and boat-in destinations that compliment and are in or adjacent to private facilities, particularly if the private facility will agree to supervise and manage such amenities, thus lowering the long-term cost to the public.
- **Policy P-6:** Support multiple uses of Delta agricultural lands, such as seasonal hunting and provisions for wildlife habitat.
- **Policy P-7:** Support improved access for bank fishing along state highways, county roads, and other appropriate areas where safe and adequate parking, law enforcement, waste management and sanitation facilities, and emergency response can be provided and where proper rights-of-access have been acquired.
- **Policy P-10:** Promote and encourage Delta-wide communication, coordination, and collaboration on boating and waterway-related programs including, but not limited to, marine patrols, removal of debris and abandoned vessels, invasive species control, clean and safe

boating education and enforcement, maintenance of existing anchorage, mooring, and berthing areas, and emergency response in the Delta.

The Act also established a provision in the Public Resources Code that calls for local governments with lands in the Primary Zone to ensure that their general plans are consistent with the plan: "Within 180 days from the date of the adoption of the resources management plan or any amendments by the commission, all local governments shall submit to the commission proposed amendments that will cause their general plans to be consistent with the resources management plan with respect to land located within the primary zone" (Office of Planning and Research 2003:200).

15.2.2.2 Delta Protection Commission, Great California Delta Trail System

The Great California Delta Trail concept was born out of Senate Bill 1556 (Torlakson), which was filed with the Secretary of State on September 30, 2006. The bill requires the DPC to facilitate the planning and feasibility process for establishment of the Great California Delta Trail System. The Delta trail system will be a continuous regional recreational corridor and will include such recreational facilities as a bikeway and hiking trails.

The DPC is responsible for preserving, protecting, maintaining, and enhancing the Delta region's environmental resources and quality. Senate Bill 1556 requires DPC to establish a continuous recreational corridor linking the San Francisco Bay Trail system and the planned Sacramento River trails in Yolo and Sacramento Counties to the present and future trailways around the Delta, including the Delta's shorelines in Contra Costa, San Joaquin, Solano, Sacramento, and Yolo Counties. Funding for the Great California Delta Trail System comes from local transportation planning agencies. Senate Bill 1556 authorizes the transportation planning agencies that allocate funds to cities and counties with jurisdiction or a sphere of influence within the Delta, to allocate those funds to the DPC for specified activities around the Delta.

The Delta trail system project started with the creation of a "blueprint" for the trail planning process and product, focusing on Contra Costa and Solano Counties as the initial planning area. That "blueprint" (*The Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties* [Blueprint Report]), was prepared and subsequently adopted on September 23, 2010. The Blueprint Report includes a specific vision, goals, outreach, feasibility, the planning process, and policies for the Delta trail system. The report does not include trail alignment selection, but is focused on developing the planning and feasibility process. This adopted report is intended to be utilized by other cities and counties when developing their portions of the Delta trail system.

15.2.2.3 California Department of Parks and Recreation Plans

Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh

The Sacramento-San Joaquin Delta Reform Act mandated that the Department of Parks and Recreation develop recommendations to expand state recreation areas in the region. To comply with the legislation, the Department of Parks and Recreation issued the Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh in May 2011. While the Recreation Proposal is not a binding policy document and it concedes that funding is not currently available to implement the recommendations, the Recreation Proposal does represent the department's vision for the region (California State Parks 2011). The document states, "The proposal recommends a network of recreation areas, including parks, resorts, boating facilities, historic communities, agritourism

attractions, and other visitor-oriented businesses. These areas would be connected by scenic driving routes, boating trails, or bicycling and hiking trails… Proposal recommendations aim to provide visitors and residents authentic outdoor experiences rooted in the unique and enduring character of the Delta and Suisun Marsh."

The Recreation Proposal recommends improvement and, in some cases, expansion of four recreation areas in the Delta (Delta Meadows and Locke Boarding House, Stone Lakes, and Brannan Island and Franks Tract state recreation areas) and six state parks near the Delta and Suisun Marsh (Old Sacramento State Historic Park and California Indian Heritage Center, Caswell Memorial State Park, Bethany Reservoir State Recreation Area, the State Historic Park at John Marsh/Cowell Ranch, Benicia Capitol State Historic Park, and Benicia State Recreation Area). The Recreation Proposal further recommends creation of four new state parks in the region at Barker Slough, Elkhorn Basin, Wright-Elmwood Tract and in the south Delta, possibly near Old River.

Central Valley Vision

The Central Valley Vision project began in 2003, with the goals of understanding the recreation needs of Central Valley residents over the next 35 years and making recommendations for actions that the DPR might address through expansion of state park facilities in the region. Following the November 2006 release of the Central Valley Vision report, DPR released its *Central Valley Vision Draft Implementation Pla*n in 2008 (California Department of Parks and Recreation 2008b). The draft 20-year plan provides a "catalog of potential future projects" that includes expanding existing parks and adding new parks in the Central Valley. The plan outlines these potential projects in the Delta: acquiring more land; developing facilities and improving access at Delta Meadows; developing interpretation and education opportunities at the Locke Boarding House; expanding facilities at Brannan Island State Recreation Area; and providing recreation at Twitchell, Sherman, and Lower Sherman Islands. The implementation plan also recommends creation of the California Delta Heritage Corridor, which would link historic Delta towns, recreation sites, nature areas, and farm stands (California Department of Parks and Recreation 2008b).

Folsom Lake State Recreation Area General Plan and Amendment

The first *Folsom Lake State Recreation Area General Plan* was approved in 1979. The plan was amended in 1996 to include additional facility recommendations for the Negro Bar (Lake Natoma), Willow Creek (Lake Natoma), and Beals Point (Folsom Lake) areas as part of the American River Bridge Crossing Project at Lake Natoma (California Department of Parks and Recreation 1996). DPR is updating the general plan for the Folsom Lake State Recreation Area (California Department of Parks and Recreation 2010d).

The original 1979 general plan identifies the objectives for both Lake Natoma and Folsom Lake (included as appendices to California Department of Parks and Recreation 1996). The following recreation-related objectives were identified for Lake Natoma.

- **Objective 3:** To upgrade the quality of existing recreation use areas and to solve the physical problems in these areas.
- **Objective 4:** To minimize environmental damage caused by recreation use and development.
- **Objective 7:** To tie bicycle, riding, and hiking trails from Sacramento to Folsom Lake and beyond.

The following recreation-related objectives were identified for Folsom Lake.

- **Objective 1:** To emphasize recreation use of Folsom Lake.
- **Objective 2:** To continue to provide existing opportunities for diverse recreational uses of low to high intensity.
- **Objective 4:** To upgrade the quality of existing recreation use areas, and to solve physical problems in these areas.
- **Objective 5:** To establish a boat carrying capacity for the lake (to maintain the high quality boating experience on Folsom lake).
- **Objective 6:** To increase opportunities for public access to the lake shore for informal use (fishing, swimming, hiking, etc.).
- **Objective 7:** To encourage boating opportunities for non-boat users.
- **Objective 8:** To provide an opportunity for water-oriented recreation that is not feasible at Auburn Reservoir.
- **Objective 10:** To increase overnight camping and accommodate increasing demand.
- **Objective 11:** To link Folsom Lake with Sacramento via the American River Parkway bicycle, riding, and hiking trail system.
- **Objective 15:** To interpret to the public the significant natural and cultural resources of the landscape.
- **Objective 17:** To monitor recreation use and to periodically reassess the ability of the resources to absorb the use they are receiving; to adjust recreation use as necessary to adequately protect resource values.

General Plan for Brannan Island and Franks Tract State Recreation Areas

Brannan Island State Recreation Area

The approved purpose of Brannan Island State Recreation Area is "to make permanently available to the people the opportunity to use and enjoy a portion of the Delta region of California and its extensive inland waterways" (California Department of Parks and Recreation 1988a). In addition, "the function of the Department of Parks and Recreation at Brannan Island State Recreation Area is to provide facilities and opportunities for the enjoyment of a variety of water-oriented and other recreational activities, consistent with the declared purpose of the unit" (California Department of Parks and Recreation 1988a).

The General Plan for Brannan Island and Franks Tract State Recreation Areas (California Department of Parks and Recreation 1988a) describes the resource management policies, allowable use levels, land use and facility recommendations, and interpretive recommendations for the two State Recreation Areas. The policies for Brannan Island State Recreation Area focus on maintaining and enhancing the natural resources in the State Recreation Area, some of which relate to recreation, including reducing human-caused erosion and enhancing viewsheds in the State Recreation Area. Allowable use levels in the park vary from low to high, with higher use areas throughout most of the central and southern (along Threemile Slough) portions of the park and low to moderate use areas on the eastern, western (along Threemile Slough near the SR 160 bridge), and northern portions of

the park. The general plan also recommends proposed uses, facilities, and interpretive programs; many have been implemented since 1988.

The general plan includes the following land use and development goals for Brannan Island State Recreation Area.

- Provide recreational opportunities for varying use intensity levels in the unit, but with an emphasis on overall high-intensity use.
- Improve existing facilities, and add new ones to provide more recreational opportunities, especially for swimming, boating, boardsailing, camping, and trail activities.
- Improve access to and use of the surrounding water resources, particularly for swimmers, boardsailors, picnickers, campers, boaters, and fishermen.
- Improve visitors' enjoyment of the unit by providing better wind protection, more shade in effective locations, a more attractive environmental setting, and more adequate facilities.
- Provide additional interpretive facilities to explain the cultural and natural history of the Delta and its relevance to the State Water Project.

State budget cuts in 2011 curtailed services and facilities available at Brannan Island State Recreation Area until further notice, expected in July 2012. Details of the partial closure are discussed in Section 15.1.1.1, under *Recreational Facilities in the Delta, Sacramento County, Public Facilities/Areas*).

Franks Tract State Recreation Area

The approved purpose of Franks Tract State Recreation Area is "to perpetuate as a recreation resource the flooded island in the Sacramento-San Joaquin Delta known as 'Franks Tract' and to provide permanently the opportunity for water-related recreational activities…" In addition, "the function of the Department of Parks and Recreation at Franks Tract State Recreation Area is to provide facilities and services for public enjoyment of the features and recreational opportunities afforded by this unit" (California Department of Parks and Recreation 1988a).

Franks Tract State Recreation Area encompasses the inundated islands of Franks Tract and Little Franks Tract, and the policies focus on maintaining water quality, protecting soils, and protecting and enhancing habitat and species. Several policies mention considerations for placing new structures or facilities. Allowable use levels are "low" at Little Franks Tract and "moderate" on Franks Tract, except where wetland protection is of greater concern than providing recreation. The general plan also recommends two land use and development goals: creating additional land base for recreation activities and providing minimum needed recreation facilities. The plan outlines the concept of increasing the land base by creating islands in Franks Tract and Little Franks Tract. Facilities planned for the islands at Franks Tract include beaches, picnic areas, floating docks, interpretive signage, and an observation platform. The plan outlines interpretive signage along a water trail for Little Franks Tract. Unlike for Brannan Island State Recreation Area, the facility development recommendations for Franks Tract State Recreation Area have not been implemented.

The general plan includes the following land use and development goals for Franks Tract State Recreation Area.

- Provide low-intensity recreational opportunities by creating additional land base (especially beaches) for recreation activities.

- Provide only the minimum of recreation facilities to accommodate the needs of boat-in visitors.

Lake Oroville State Recreation Area Resource Management Plan and General Development Plan and Amendment

In 1973, the *Lake Oroville State Recreation Area Resource Management Plan* and *General Development Plan* were approved. The plans outlined the allowable use intensities and planned development for each area in the State Recreation Area (California Department of Parks and Recreation 1973). In 1988, an amendment to the plan was approved to address three issues in the Lime Saddle area: acquisition of land, disposal of a parcel, and expansion of the existing Lime Saddle Marina (California Department of Parks and Recreation 1988b). DPR completed a new draft general plan in 2005, concurrent with DWR's Lake Oroville facilities Federal Energy Regulatory Commission relicensing process, but this proposed new general plan is awaiting California Environmental Quality Act (CEQA) review and thereafter will require formal adoption by the California State Parks Commission.

San Luis Reservoir State Recreation Area General Development Plan and Amendment

The General Development Plan for the San Luis Reservoir State Recreation Area was approved in 1971, although the plan was not developed to the same level of detail as later DPR general plans. In 1986, the general development plan was amended to revise the land use designation for about 65 acres of land on the northern side of O'Neill Forebay from undesignated to a day and overnight use designation, thus allowing development of overnight facilities in the Meadows area and boat-in, day-use, and camping facilities in the Grant Line area (California Department of Parks and Recreation 1986). DPR is currently updating the general plan for the San Luis Reservoir State Recreation Area (California Department of Parks and Recreation 2010f).

15.2.2.4 California Department of Fish and Wildlife Plans

CDFW owns and manages seven areas in the Delta, primarily for habitat and species protection and enhancement. Only two of the seven areas owned by CDFW have management plans: Yolo Bypass Wildlife Area and Lower Sherman Island Wildlife Area. Goals and objectives related to recreation and public use in these two plans are described below. The other areas are managed under the current regulations found in the California Fish and Game Code and Title 14 of the California Code of Regulations (CCR). Regulations for wildlife areas and ecological reserves, as well as hunting and fishing regulations, can be found in Title 14.

Yolo Bypass Wildlife Area Land Management Plan

The *Yolo Bypass Wildlife Area Land Management Plan* (California Department of Fish and Game 2008b), prepared for the 16,770-acre state wildlife area, provides guidance on managing habitats, species, and programs, and compatible, appropriate public uses. Two elements of the plan relate to recreational use: (1) the Authorized Public Use Element, and (2) the Unauthorized Public Use Element. Goals of the Authorized Public Use Element include providing new and increased opportunities for appropriate wildlife-dependent activities, supporting and expanding environmental education and interpretation opportunities, coordinating public access and use to accommodate a variety of users, fostering partnerships, expanding the volunteer program, minimizing user conflicts, supporting use of the wildlife area by Native Americans, and facilitating

safe use of the wildlife area. Tasks identified for these goals are numerous and include such items as expanding automobile tour routes, adding signage, adding wildlife-viewing facilities, expanding hunting opportunities, improving the entrance, evaluating the feasibility of additional trails, and considering adding boating and fishing opportunities without incurring any liability. The Unauthorized Public Use Element focuses on preventing unauthorized uses, such as camping or dumping, through such tasks as patrolling the areas and installing signage.

Lower Sherman Island Wildlife Area Land Management Plan

The *Land Management Plan for the Lower Sherman Island Wildlife Area Management* provides guidance for habitats, species, programs, and appropriate public uses (California Department of Fish and Game 2007a). The wildlife area was originally acquired to provide a publicly accessible hunting and fishing area, which is reflected in the goals of the Authorized Public Use Element. The goals of this element focus on supporting compatible public uses and environmental education, providing long-term hunting and fishing opportunities, providing for a variety of users and minimizing user conflicts, evaluating requests by Native Americans for use of the wildlife area, and encouraging safe use of the wildlife area. Tasks related to these goals include providing signage at access points, periodically reviewing programs and regulations, identifying and resolving conflicts, monitoring and enforcing boat safety regulations, and installing warning signs and buoys. The Unauthorized Public Use Element focuses on goals to discourage trash dumping and prevent unauthorized uses, such as camping. Tasks associated with these goals include monitoring, installing signage, and patrolling the area.

15.2.2.5 California Department of Parks and Recreation's Division of Boating and Waterways Regulations and Programs

One of the primary missions of CDBW is to promote a safer and more enjoyable boating environment. Although boating law enforcement in California is performed at the local level by local agencies, such as county sheriff and municipal marine patrol units, CDBW, through its Boating Law Enforcement Unit, acts to meet the goals of providing for adequate and consistent law enforcement through local agencies throughout the State. California boating laws are contained in instruments of state law, including the California Harbors and Navigation Code, Vehicle Code, Penal Code, and California Code of Regulations, among others. California boating laws and regulations apply uniformly on all waters of the state. However, California law does not replace the U.S. Coast Guard and other federal regulations in force on federally navigable waters, but it is in general conformity with these (California Department of Parks and Recreation's Division of Boating and Waterways 2009:i).

CDBW conducts a program focused on providing funding for local boating law enforcement agencies and training of law enforcement personnel (California Department of Parks and Recreation's Division of Boating and Waterways 2007). Another CDBW program aimed at boating safety is the Aquatic Center Grant Program, through which the department makes grants available for nonprofit organizations, colleges and universities, and local agencies for boating safety education.

CDBW supports the purpose of providing boaters with adequate facilities on the water by providing boat launch facility grants and small craft harbor development loans to public entities. Private marina owners can also apply for construction loans for improvements, such as berthing, restrooms, vessel pump-out stations, boat launching and parking facilities, and dry boat storage. The Aquatic Weed Control Program is authorized to control water hyacinth (*Eichhornia crassipes*), Brazilian

waterweed (*Egeria densa*), and South American spongeplant (*Limnobium laevigatum*) in the Delta, its tributaries, and Suisun Marsh. The Program is focused on controlling water hyacinth and Brazilian waterweed, which are highly invasive aquatic plant species that are widespread in the Delta and have substantial impacts on recreational activities in the Delta, its tributaries, and Suisun Marsh. Finally, the Abandoned Watercraft Abatement Fund is administered by CDBW with the purpose of providing funds to public agencies to remove and dispose of abandoned or wrecked vessels that pose a significant hazard to navigation.

15.2.2.6 California State Lands Commission Regulations

The California State Lands Commission has jurisdiction over nearly 4 million acres of lands that underlie navigable and tidal waterways. Known as "Sovereign Lands," these include riverbeds, streams, sloughs, nonnavigable lakes, tidal navigable bays and lagoons, tide and submerged lands adjacent to the coast, and offshore islands from the mean high tide line to 3 nautical miles offshore. The California State Lands Commission offers leases and permits for marinas, and developers of marinas along the state's navigable rivers, natural lakes, and bays are required by law to lease state land at marina sites. Private landowners who wish to install a recreational pier adjacent to their waterfront residence must likewise obtain a lease from the commission (Delta Protection Commission 2006).

15.2.3 Regional and Local Plans, Policies, and Regulations

15.2.3.1 City and County General Plans

Alameda County

East County Area Plan

The *East County Area Plan* functions as the general plan document for eastern Alameda County, which extends from the Pleasanton/Dublin ridgeline east to San Joaquin County and from Contra Costa County south to Santa Clara County (Alameda County 2000). Policies seek to promote recreation on open space, agricultural, and watershed lands in the East County area, including the expansion of the existing regional park system and the provision of new trail corridors. The plan contains the following policies on park and recreation facilities.

- **Policy 225:** The County shall integrate East County trail plans…with the California Recreational Trail System.

Contra Costa County

Contra Costa County General Plan

The *Contra Costa County General Plan 2005–2020* (Contra Costa County 2005) addresses recreational resources in the Open Space Element. Overall goals and policies seek to preserve and protect the county's recreational resource lands. Policies specifically related to parks and open space areas, local parks, and trails provide protection and enhancement of the recreational value of the Delta, allow only recreational development that complements the natural features of the area, and provide distribution and management of recreational activity according to an area's carrying capacity while recognizing the regional importance of each area's recreation resources.

The county has identified Parks and Open Space Areas, some of which are in the statutory Delta. Browns Island Regional Shoreline, Antioch Dunes NWR, Big Break Regional Shoreline, and Franks Tract State Recreation Area are identified as existing parks. The county identifies CALFED Bay-Delta Program wetlands and the Jersey Island Management Area as existing open space. A number of existing neighborhood and community parks are also located in the Delta, with one of each type proposed for Bethel Island. The general plan also illustrates existing and proposed biking, hiking, and equestrian trails on Bethel Island, Hotchkiss Tract, along the Delta shoreline, and in the northeastern portion of the county.

The general plan includes the following policies related to recreation.

- **Policy 3-12:** Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and to assuring balanced land use. Preservation and conservation of open space, wetlands, parks, hillsides, and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, protect unique scenery, and provide a wide range of recreational opportunities for county residents.
- **Policy 3-46:** Water-oriented recreation uses shall be permitted in East County provided that such development is compatible with the Delta's unique ecology.
- **Policy 5-39:** Multiple recreation use, including trail, observation points, and picnicking spots, where appropriate, shall be encouraged along scenic routes.
- **Policy 8-96:** Land use activities in the immediate vicinity of harbors and adjacent facilities shall be compatible with the continued optimum commercial and recreational operations of the harbor.
- **Policy 9-43:** Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation, such as fishing, boating, and picnicking, shall be provided.
- **Policy 9-44:** As a unique resource of State-wide importance, the Delta shall be developed for recreation use in accordance with the state environmental goals and policies. The recreational value of the Delta shall be protected and enhanced.

The general plan contains additional policies for specific areas, including the following for the Bay Point and Discovery Bay areas, respectively.

(a) The utility of the Delta De Anza Recreational Trail should be enhanced (Specific Plan Policy C-10).

(b) The development concept of the Discovery Bay West project shall provide improved functional integration between the water element, other parks and recreation facilities, and the residential project. Public access to areas east should be explored.

City of Antioch General Plan

The *City of Antioch General Plan* (City of Antioch 2003) aims to provide a range of parks, specialized recreational facilities, and natural open spaces. Objectives and policies encourage the preservation of significant natural features and specifically seek to secure and develop a shoreline park along the San Joaquin River, with recreational trails and viewing areas for public enjoyment of the waterfront. The Rivertown/Urban Waterfront Focus Area targets the downtown and waterfront areas for

revitalization, with an emphasis on creating new land uses along the riverfront, including developing water-oriented recreational facilities. Plans may include expansion of the marina, improvement of the boat launch, constructing a shoreline trail, bocce ball courts, and a continuous park to provide public access to the entire riverfront. The general plan contains the following policies on recreation.

- **Policy 8.9.2—Parks and Recreation Policies**

  d. Secure and develop a shoreline park along the San Joaquin River consisting of recreational trails, viewing areas, and natural habitat protection so as to ensure availability of the waterfront in the City for public enjoyment.

- **Policy 10.3.1—Open Space Objective:** Maintain, preserve and acquire open space and its associated natural resources by providing parks for active and passive recreation, trails, and by preserving natural, scenic, and other open space resources.

- **Policy 10.3.2—Open Space Policies**

  c. Maintain the shoreline of the San Joaquin River as an integrated system of natural (wetlands) and recreational (trails and viewpoints) open space as set forth in the Land Use Element and Public Services and Facilities Element.

City of Brentwood General Plan

The *City of Brentwood General Plan* (City of Brentwood 2011) seeks to provide park and recreational facilities that support vibrant neighborhoods, nonmotorized circulation, and balanced development. Policies specifically encourage the development of regional recreational facilities in the Delta and the growth of Delta water activities that may be served by Brentwood businesses. The plan directs the city to prepare and adopt a parks, trails, and recreation master plan.

The general plan includes the following policies and associated action programs.

Economic Development Element Policies and Action Program

- **Policy 1.2—Tourism/Recreation:** Encourage the growth of recreation and tourism activities within the East County area.
- **Policy 1.2.1—Recreational Activities:** Encourage and support Delta water activities that may be served by Brentwood businesses.
- **Policy 1.2.3—Recreational Activities:** Support the East Bay Park Regional Park and Trail System development and use.

Community Facilities Element Action Program

- **Policy 1.7.8—Community Facilities:** The City of Brentwood shall pursue regional recreational facilities specifically in the areas of the Delta and Los Vaqueros Reservoir, and shall participate in and support regional planning for large-scale recreational uses.

City of Oakley General Plan

The *City of Oakley 2020 General Plan* (City of Oakley 2002) identifies goals and policies to create a strong connection to the Delta, including the development of recreational facilities and public access. Delta Recreation is a specific land-use designation for open space and recreation lands and encompasses approximately 5 acres in the lowlands of the San Joaquin Delta along the city's

northern edge. Because of their proximity to the Delta, these lands have substantial recreational value and offer opportunities for public access to the Oakley waterfront, including parklands and trails. Agriculture and wildlife habitat are also considered appropriate uses, and the City of Oakley may also allow marinas, shooting ranges, duck and other hunting clubs, campgrounds, golf courses, and other outdoor recreation complexes in this designation (City of Oakley 2002).

The general plan includes the following policies related to recreation.

- **Policy 1.1.6:** Ensure a strong physical connection to the Delta including convenient public access and recreational opportunities.
- **Policy 7.4.3:** Manage shoreline and regional parks along Oakley's waterfront such as the Big Break and Dutch Slough shoreline in a manner that provides for appropriate public access and enhances the natural environment.
- **Policy 7.4.5:** Support and encourage boat access and marinas. Consider additional marina facilities if proposed and appropriate.
- **Policy 7.4.11:** Protect the visual accessibility of waterways by avoiding future development that creates visual barriers adjacent to or along the water's edge.
- **Policy 7.4.12:** Promote the development or preservation of a private or public marina with boat launching and berthing facilities, a fuel dock and waste pump-out station, restrooms and showers, laundry facilities, a bait/tackle/food store, day use, overnight camping, and RV parking areas, a fishing pier, and a restaurant.

City of Pittsburg General Plan

The *City of Pittsburg General Plan* (City of Pittsburg 2004) notes that although nearly 3 miles of shoreline lie within Pittsburg city limits, public access to the Suisun Bay waterfront is lacking. Two small parks and several small-craft marinas exist adjacent to the downtown area. The plan identifies goals and policies to maximize public access and recreational facilities along the waterfront, including developing pocket parks, a waterfront trail/bikeway, and possible facilities on Browns Island (a unit of the EBRPD). The plan references the City of Pittsburg's Parks, Recreation, and Open Space Master Plan as a document to bridge the gap between general plan policies and the actual detailed planning and development of park and recreational facilities (City of Pittsburg 2004).

The general plan includes the following goals and policies that address recreation.

- **Policy 8-P-17:** Work with East Bay Regional Parks District to explore the possibility of developing passive recreation uses and educational programs on Browns Island, such as boating excursions to view waterfowl nesting areas.
- **Policy 8-P-19:** Cooperate with East Bay Municipal Utility District to ensure continued public access to the Delta De Anza Trail along the Mokelumne Aqueduct right-of way.

- **Goal 8-G-5:** Maximize public access to and recreational facilities along the City's waterfront areas.
  - **Policy 8-P-26:** Explore all potential improvements to fully integrate the City's shoreline into the urban fabric, including:
    - Waterfront Parks. Pursue and develop small pockets of open space that provide physical and visual access to the waterfront.

- Waterfront Trail/Bikeway. A linear park along the shoreline, featuring a path for both walking and biking, would encourage more vibrant activity along the waterfront.

Sacramento County

Sacramento County General Plan

The County of Sacramento adopted its *General Plan of 2005–2030* in November 2011. An amendment being processed to the General Plan would establish a new element in the General Plan, the Delta Protection Element, to incorporate the "Land Use and Resources Management Plan for the Primary Zone of the Delta" (LURMP) (Delta Protection Commission 1995). Delta jurisdictions, including Sacramento County, are required to make their General Plans consistent with the LURMP. The DPC is charged with instituting policies and programs to preserve and restore the weltand and habitat across the 500,000 acre Sacramento-San Joaquin Delta. Previously, Sacramento County incorporated the LURMP by reference in the Open Space Element.

The goal of the Recreation and Access section of the Draft Delta Protection Element is to promote continued recreation use of the land and waters of the Delta; to promote facilities that support the construction, maintenance and supervision of recreational uses; to protect landowners from unauthorized recreational uses on private lands; and to maximize dwindling public funds for recreation by promoting public-private partnerships and multiple use of Delta lands. The policies enumerated in the Recreation and Access section of the Draft Delta Protection Element reiterate verbatim the policies contained in the 1995 LURMP (listed above in Section 15.2.2.1). The section of the Draft Delta Protection Element that addresses those topics contains 13 policies that primarily provide local governments with guidance for developing marine patrols and boater education and coordination of those functions with the Coast Guard, CDFW, and other agencies (Sacramento County 2013b).

The City of Sacramento formally adopted its new 2030 general plan on March 3, 2009 (City of Sacramento 2012). The *Sacramento 2030 General Plan* identifies general policies and goals to provide a system of parks, water corridor parkways, and trails throughout the city. The eastern bank of the Sacramento River falls under the Open Space/Parks/Recreation designation, and the City of Sacramento seeks to continue to conserve, enhance, and provide public access to designated open space areas along the river. Allowed uses in Open Space include natural parks; woodlands; habitat; agriculture; floodplains; areas with permanent open space easements; buffers between urban areas; and compatible public, quasi-public, and selected special uses. Allowed uses include community and regional parks, greenways, trails, golf courses, and commercial recreational facilities with an outdoor emphasis. Implementation measures direct the city to update its parks and recreation master plan every 5 years to coincide with general plan updates.

The general plan includes the following goal and policies.

- **Goal LU 2.2—City of Rivers:** Preserve and enhance Sacramento's riverfronts as signature features and destinations within the City and maximize riverfront access from adjoining neighborhoods to facilitate public enjoyment of this unique open space resource.
    - **Policy LU 2.2.1—World-Class Rivers:** The City shall encourage development throughout the City to feature (e.g., access, building orientation, design) the Sacramento and American Rivers and shall develop a world-class system of riverfront parks and open spaces that provide a destination for visitors and respite from the urban setting for residents.

Open Space, Parks, and Recreation Policies

- **Policy LU 9.1.1—Open Space Preservation:** The City shall limit, to the extent feasible, the wasteful and inefficient conversion of open space to urban uses and place a high priority on acquiring and preserving open space lands for recreation, habitat protection and enhancement, flood hazard management, public safety, water and agricultural resources protection, and overall community benefit.
- **Policy LU 9.1.3—Connected Open Space System:** The City shall ensure that new development does not create barriers to the connections among the various parts of the City's parks and open space systems.

The *Pocket Community Plan* focuses on an 8-square-mile area bounded on the north by 35th Avenue and the Sacramento River, on the south and west by the Sacramento River, and on the east by Freeport Boulevard. Policies unique to the plan area seek to improve and expand parkway-greenbelt-open spaces, including along the Sacramento River (City of Sacramento 2009). The following Recreation, Education, and Culture policy is included in the Pocket Community Plan.

- **Policy P.ERC 1.1—Parkways/Greenways:** The City shall improve and maintain public parkway-greenbelt-open spaces which are visual assets to the neighborhoods.

American River Parkway Plan

The *American River Parkway Plan 2008* (Sacramento County 2008) is a policy and action document that provides guidance on land use decisions affecting the parkway. The plan also acts as the management plan for the Federal and State Wild and Scenic Rivers Acts (the lower American River is classified as a "Recreation" river in the State and Federal Wild and Scenic River Systems). According to the plan, "[t]he American River Parkway is a unique regional facility which shall be managed to balance the goals of: a) preserving naturalistic open space and protecting environmental quality within the urban environment, and b) contributing to the provision of recreational opportunities in the Sacramento area." The following goals are included in the plan.

- To provide, protect and enhance for public use a continuous open space greenbelt along the American River extending from the Sacramento River to Folsom Dam.
- To provide appropriate access and facilities so that present and future generations can enjoy the amenities and resources of the Parkway that enhance the enjoyment of leisure activities.
- To preserve, protect, interpret and improve the natural, archaeological, historical and recreational resources of the Parkway, including an adequate flow of high quality water, anadromous and resident fishes, migratory and resident wildlife, and diverse natural vegetation.
- To mitigate adverse effects of activities and facilities adjacent to the Parkway.
- To provide public safety and protection within and adjacent to the Parkway.

Policies in the plan touch on many topics, including permitted recreational activities and facilities; prohibited activities and facilities; allowable group activities; permitted commercial activities; and appropriate location, use, and design of public access and trails. The plan also includes guiding concepts for management. The following policies are relevant to recreation:

- **Policy 1.1 Balanced Management:** The American River Parkway is a unique regional asset that shall be managed to balance the goals of controlling flooding; preserving and enhancing native vegetation, native fish species, the naturalistic open space and environmental quality within the

urban environment; maintaining and improving water flow and quality; providing adequate habitat connectivity and travel corridors to support migratory and resident wildlife; providing recreational opportunities; and ensuring public safety.

- **Policy 1.2 Recreation:** The Parkway shall be oriented to passive, unstructured water-enhanced recreation activities which are appropriate in a natural environment, and which are not normally provided by other County recreational facilities. To this end, development in the Parkway shall be minimal, and facilities which are primarily visitor attractions should be placed in less sensitive areas within the County Park system. Insofar as possible, development shall not occur in areas where natural ecosystems are still relatively undisturbed.

The following policies are specific to the Discovery Park area.

- **Policy 10.9:** Maintain the existing boat access points in their current locations and in a manner that protects and improves water quality and bank stability.
- **Policy 10.10:** Create short-term equestrian trailer parking and an equestrian staging area that includes appropriate facilities such as water, hitching posts, and a manure bunker.

San Joaquin County

San Joaquin County General Plan

The *San Joaquin County General Plan 2010* (San Joaquin County 1992) notes that the Delta provides for considerable recreation and enjoyment of the county's water resources. It identifies substantial resource areas for recreation, including the waterways of the Delta and the Mokelumne River. The plan objectives seek to "protect the diverse resources upon which recreation is based, such as waterways [and] marsh lands" and "ensure the preservation of the Delta as a recreational resource" (San Joaquin County 1992). Policies specific to the Delta identify it as an area of international importance and a major recreational resource of the county and limit development on the islands to water-dependent uses, recreation, and agriculture. The general plan includes the following objectives and policies that address recreation:

Open Space

- **Policy 6:** The County shall consider waterways, levees, and utility corridors as major elements of the open space network and shall encourage their use for recreation and trails in appropriate areas.

Public Facilities

- **Objective 2:** To protect the diverse resources upon which recreation is based, such as waterways, marsh lands, wildlife habitats, unique land and scenic features, and historical and cultural sites.
- **Objective 3:** To ensure the preservation of the Delta and the opportunity for the public to learn about and enjoy this unique recreation resource.
    - **Policy 7:** Natural features shall be preserved in recreation areas, and opportunities to experience natural settings shall be provided.
    - **Policy 13:** Recreational use of the County's waterways will be supported, and the County shall ensure adequate public access to waterways at selected locations.

- **Policy 14:** Water-related resources shall be protected for their importance to recreational uses.
- **Policy 15:** The recreational values of the Delta, the Mokelumne River, and the Stanislaus River shall be protected.
- **Policy 16:** The recreational potential, particularly for trails, of the Calaveras River, the San Joaquin River, the Stockton Diverting Canal, and water conveyor projects shall be recognized and studied. The potential for land use conflicts associated with public use of waterways (e.g., trespassing, littering, vandalism) should be assessed for selected recreation sites.
- **Policy 17:** The Delta shall be recognized as an area of international importance and as a major recreational, wildlife, agricultural, and economic resource of San Joaquin County.
- **Policy 18:** Waterway development and development on Delta islands shall protect the natural beauty, the fisheries, wildlife, riparian vegetation, and the navigability of the waterway.
- **Policy 19:** Development in the Delta islands shall generally be limited to water-dependent uses, recreation, and agricultural uses.

Solano County

Solano County General Plan

The *Solano County General Plan* (Solano County 2008a) identifies policies to maintain and expand public access and recreational activities in Suisun Marsh, such as duck hunting, boating, fishing, and nature study. The Suisun Marsh Addendum notes the opportunities for increasing the recreation diversity and public access in the marsh, particularly given the increase in demand expected to accompany population growth, and identifies related policies. The Park and Recreation Element (Solano County 2003), adopted before the most recent general plan, identifies general policies for managing and improving the county's park and recreational facilities. Solano County land located in the statutory Delta is designated as agricultural. The general plan includes the following policies specific to recreation in the Suisun Marsh and the Delta:

- **Policy RS.P-18:** The County shall ensure that public access at appropriate locations is provided and protected along the County's significant waterways within the Suisun Marsh.
- **Policy RS.P-26:** Promote continued recreational use of the land and waters of the Delta, including fishing and boating; ensure needed recreational facilities are constructed, maintained, and supervised; protect landowners from unauthorized recreational uses on private lands; and maximize dwindling public funds for recreation by promoting public private partnerships and multiple uses of Delta lands consistent with the Land Use and Resource Management Plan for the Primary Zone of the Delta.

Additional objectives and associated policies in the Park and Recreation Element include the following.

- **Objective 3:** Identify, preserve and manage significant regional recreation and natural areas.
  - **Policy C:** The County shall work to protect identified recreational sites and natural resource areas.
- **Objective 5:** Encourage appropriate multiple uses of public land for recreation and other uses.

- **Policy A:** The County shall make the optimum use of public lands by developing or promoting development of facilities that are compatible with the primary resources of the site.

The *Suisun Marsh Policy Addendum* (Solano County 2008b) states that recreation use in the marsh should be guided through the following policies.

- **Policy 1:** Within the Suisun Marsh, provision should be made for public and private recreational development to allow for public recreation and access to the Marsh for such uses as fishing, hunting, boating, picnicking, hiking and nature study.
- **Policy 2:** Recreational uses in the Marsh should be located on the outer portions near population centers and easily accessible from existing roads.
- **Policy 3:** Recreational activities that could result in adverse impacts on the environment of the Suisun Marsh should not be permitted.
- **Policy 4:** Additional land should be acquired within the Suisun Marsh to provide for increased public duck hunting recreational use and additional refuge areas for waterfowl during the hunting season. Acquisition priority should be given to those lands not now operated as managed wetlands.
- **Policy 5:** Land should also be purchased for public recreation and access to the Marsh for such uses as fishing, boat launching, nature study, and for scientific and educational uses. These areas should be located on the outer portions of the Marsh near the population centers and easily accessible from existing roads. Improvements for public use should be consistent with protection of wildlife resources.
- **Policy 6:** Public agencies acquiring land in the Marsh for public access and recreational use should provide for a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking, and nature study.
- **Policy 7:** Agencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintained litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.
- **Policy 8:** Recreational activities that could result in adverse impacts on the environmental or aesthetic qualities of the Suisun Marsh should not be permitted. Levels of use should also be monitored to insure that their intensity is compatible with other recreation activities and with protection of the Marsh environment. For example, boat speeds and excessive noise should be controlled and activities such as water skiing and naval training exercises should be kept at an acceptable level.

City of Rio Vista General Plan

The Open Space and Recreation Element of the *Rio Vista General Plan* (City of Rio Vista 2002) identifies goals, policies, and actions regarding the long-term future of parks and open space in the city. The city has five neighborhood parks, two community parks, a fishing access and pier, a public dock and launch, and a marina. The city also operates paths, a golf course, a museum, a youth center, and a senior center. It will have conveyed to it the former U.S. Army Reserve base, southwest of downtown Rio Vista on the Sacramento River. A condition of the conveyance is that the city must

use the property for recreational purposes. Goals and policies in the Recreation Element relate to providing public access and viewing opportunities on the Sacramento River, creating an open space system, developing a comprehensive trails system, and supporting preservation and enhancement of natural resources. Parks and recreation goals include providing a variety of opportunities for city residents, well-designed parks and recreational facilities, city parks consistent with the rate of residential development, and well-designed parks that enhance neighborhood identity and character. The general plan includes the following goals and policies that address recreation:

- **Goal 5.4:** To protect and develop native habitat and create a variety of recreational experiences.
- **Goal 9.1:** To provide public access and view opportunities on the Sacramento River to the maximum extent feasible.
    - **Policy 9.1.C:** The City shall enhance the Sacramento River and its waterfront as a scenic resource consistent with water-oriented recreation.
    - **Policy 10.1.C:** The City shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible.
        - High erosion hazard areas
        - Scenic and trail corridors
        - Streams and riparian vegetation
        - Wetlands
        - Drainage corridors
        - Other significant stands of vegetation
        - Wildlife corridors
        - Key hilltops
        - Views of the Sacramento River
        - Any areas of federal, state, or local significance
        - Sensitive Local Resource Areas

Sutter County

Sutter County General Plan

Sutter County adopted an updated general plan in April 2011. A public review draft identifies goals and policies related to environmental resources and parks and recreation (Sutter County 2010).

The previous general plan (Sutter County 1996) identified a policy to maintain and improve the distribution of parks in the county. The implementation program for recreation directed the county to prepare a county park and recreation master plan.

The 2010 draft plan's Public Services chapter includes a goal and policy related to ensuring adequate park, recreation and opens space lands and programs for the county's residents and addresses recreational trails.

Yolo County

Yolo County General Plan

The *Yolo County 2030 Countywide General Plan* (County of Yolo 2009) notes the existing "resource" parks in the county, several of which are along the Sacramento River (Knights Landing River Access, Elkhorn Regional Park, Helvetia Oak Grove, and Clarksburg River Access Park), and provides a map of future parks and trails, including expanded Sacramento River access and trail linkages, a gateway park to the Yolo Bypass, trail linkages along the Sacramento River between Knights Landing and Clarksburg, a gateway park in the Delta region, and a new California Indian Heritage Center. The Conservation and Open Space Element of the plan identifies policies to increase public access, trail linkages, and recreational use along waterways, particularly the Yolo Bypass and the Sacramento River.

The plan's Conservation and Open Space Element includes the following policy specifically related to recreation in the Delta region.

- **Policy CO-9.14:** Establish Clarksburg as a gateway entry for visitors to the Delta region seeking agricultural tourism, ecotourism, and recreational opportunities.

The following additional policies and associated implementation actions also address recreation.

- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support agriculture, recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.
- **Policy CO-1.2:** Develop a connected system of recreational trails to link communities and parks throughout the county.
- **Policy CO-1.3:** Create a network of regional parks and open space corridors that highlight unique resources and recreational opportunities for a variety of users.
- **Policy CO-1.6:** Develop "gateways" or trailheads that provide access for the public to County, State, and Federal lands. Where located on private land, gateways shall be developed working with willing landowners.
- **Policy CO-1.8:** Encourage responsible stewardship of private lands. Promote increased opportunities for public access to waterways and other natural areas.
- **Policy CO-1.12:** Create opportunities for ecotourism.
- **Policy CO-1.24:** Increase public access and recreational uses along waterways wherever feasible, particularly Cache Creek, Lower Putah Creek, the Yolo Bypass, and the Sacramento River.
- **Policy CO-1.25:** Allow for specified areas of resource parks to be preserved, enhanced and/or restored as mitigation sites for public agencies only, consistent with the requirements of appropriate regulatory and funding agencies, provided that adequate compensation, including funding for operations and maintenance of the mitigation, is provided.
- **Policy CO-1.27:** Support improved access for bank fishing.
- **Policy CO-1.29:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

- **Action CO-A6:** Connect the future Bay Delta Trail system, the future trail system in the lower Yolo Bypass, and the future Cache Creek Parkway system, and link those trails to the American River Bikeway system in Sacramento County.
- **Action CO-A11:** Provide recreational uses that are river or creek dependent in locations directly on Cache Creek, Putah Creek, and the Sacramento River. Examples include fishing, canoeing, boating, and nature observation. With the exception of boat launches and docks, more active uses, such as parking, restrooms, and picnic areas, shall be located in areas away from the river and sensitive riparian habitat.

An updated parks master plan is referred to as the document to implement Conservation and Open Space Element goals and policies.

City of West Sacramento General Plan

The *City of West Sacramento General Plan* identifies the goal of enhancing the relationship between the city and the Sacramento River (City of West Sacramento 2004). Related policies protect and enhance public access to the Sacramento River along the entire riverfront, promote the development of marinas, scenic areas, and open space and pedestrian links to other parks and open space areas. The plan also identifies policies to increase access to the Sacramento River Deep Water Ship Channel, including the development of water-oriented park and recreational facilities.

Goals and associated policies in the Recreation and Cultural Resources Element include the following.

- **Goal A:** To establish and maintain a public park system and recreation facilities suited to the needs of West Sacramento residents and visitors.
  - **Policy 12:** The City shall identify appropriate open spaces, including areas within the Central Business District and along the Sacramento River, for development of safe community activity areas.
- **Goal B:** To promote the provision of private recreational facilities and opportunities.
  - **Policy 4:** The City shall encourage development of new marinas in appropriate locations on the Sacramento River and along the Barge Canal.
  - **Policy 6:** The City supports the use of the barge canal for aquatic recreational activities, such as sailing, rowing, kayaking, and canoeing, and supports the establishment of a multi-use aquatic facility along the barge canal. Aquatic parks, boat houses, docks, and other support facilities for boating shall be deemed compatible uses along the Deep Water Ship Channel and the barge canal within all land use designations.
- **Goal D:** To provide and encourage, to the fullest extent possible, public access to the Sacramento River and Deep Water Ship Channel for recreation purposes.
  - **Policy 1:** The City shall ensure continuous public access to the Sacramento River for its full length within West Sacramento.
  - **Policy 2:** The City shall seek to ensure continuous public access to the Deep Water Ship Channel, within the limits imposed by safety considerations.
  - **Policy 3:** Linear access to the Sacramento River and Deep Water Ship Channel shall be linked to the City's overall system of parks, recreational pathways, and open space. To this

end, the City shall require the dedication of public access easements through new developments along the Sacramento River and Deep Water Ship Channel.

- **Policy 4:** The City shall encourage the development of public and private marinas in appropriate locations on the Sacramento River and along the Deep Water Ship Channel. Siting and development of marinas shall avoid, as much as possible, areas of significant existing riparian vegetation.
- **Policy 5:** The City shall support and encourage the development of public and private water-oriented park and recreational facilities along the Sacramento River and the Deep Water Ship Channel.

- **Goal E:** To provide a network of pedestrian and bicycle pathways connecting parks and open space areas with other destination points within and beyond the City of West Sacramento.
  - **Policy 2:** The City shall implement a Riverfront Park Master Plan that provides for a system of continuous pedestrian and bicycle pathways along the Sacramento River.
  - **Policy 4:** The City shall coordinate the development of the riverfront as envisioned in the 1997 Sacramento Greenway Plan.

The City of West Sacramento is in the process of updating its General Plan. A 2010 revised draft vision statement includes the category "Healthy Communities," which identifies an issue area of "creating convenient and safe opportunities for physical activity for residents of all ages and income levels" (City of West Sacramento 2010).

Other Local Policies and Regulations

Cosumnes River Preserve Management Plan

The Cosumnes River Preserve is a conglomeration of lands owned in fee title by multiple agencies and lands held under conservation easement. The *Cosumnes River Preserve Management Plan* (Cosumnes River Preserve 2008) directs how the preserve will be managed over the next 10 years. Goals, objectives, and actions are related to improving stewardship of the preserve through compatible uses. Goals include ensuring that recreational use, the volunteer program, the education program, and scientific research are compatible with natural resource stewardship goals, and that they promote teaching of environmental stewardship, and have adequate, stable funding. Objectives of the recreational use goal include tracking use more accurately, continuing existing opportunities, exploring opportunities for additional recreation amenities and providing new recreation experiences, continuing the trail system, maintaining a safe environment, reducing inappropriate uses, and securing funding.

The plan includes the following recreation objectives and associated actions for implementation.

Recreation Objectives

- **Objective 1.2:** Promote and enhance existing recreational opportunities.
- **Objective 1.3:** Explore opportunities for additional recreational amenities that are consistent with the five key factors and three feasibility factors.
- **Objective 1.4:** Explore the feasibility of providing a wider range of recreational experiences not currently allowed on the Preserve (e.g., horseback riding, camping, OHV use, and mountain biking) that are consistent with the five key factors and three feasibility factors.

Actions

- **Action 1.2.5:** Maintain existing paddling routes.
- **Action 1.2.6:** Maintain the existing boat dock.
- **Action 1.2.11:** Continue to provide existing hunting opportunities at the current level, unless that level is determined to be incompatible with the mission and goals of the Preserve.
- **Action 1.3.5:** Participate in discussions with Sacramento County and other Preserve Partners regarding the potential for future regional trails, including one to connect Stone Lakes Refuge to the Preserve.

East Bay Regional Park District Master Plan

The EBRPD provides and manages 65 regional parks in Alameda and Contra Costa counties, including Browns Island Regional Preserve, Antioch Regional Shoreline, Big Break Regional Shoreline, and the San Francisco Bay Water Trail. Partially completed regional trails in the Delta include segments of the Mokelumne Coast to Crest Trail and Delta/De Anza Trail. EBRPD's *Master Plan 1997* (East Bay Regional Park District 1996) sets priorities for the next 10 years and provides policies and guidelines for resource conservation, management, interpretation, public access, and recreation. Policies specifically strive to increase public access to the Delta shoreline for boating and fishing. The EBRPD is updating its Master Plan to guide "stewardship and development of current and future parks in such a way [as] to maintain a careful balance between the need to protect and conserve natural resources while offering recreational use of parklands for all to enjoy now and in the future." It expects the planning and public participation process to continue through 2012 (East Bay Regional Park District 2012b).

The 2007 master plan map (East Bay Regional Park District 2007) amended the 1997 master plan and identified areas for potential EBRPD parklands, including Delta access (on Orwood Tract), Delta recreation (on Jersey Island), and Pittsburg/Antioch regional shorelines. Potential regional trails include the Great California Delta Trail, Delta Island Shoreline Trail, the Delta Trail Extension and segments along Big Break Shoreline, the Southern Pacific Railroad, Marsh Creek Trail to Discovery Bay, and Mokelumne to Discovery Bay.

The master plan includes the following policies regarding recreation on EBRPD lands.

- The District will manage riparian and other wetland environments and their buffer zones to preserve and enhance the natural and beneficial values of these resources and to prevent the destruction, loss, or degradation of habitat. The District will participate in the preservation, restoration, and management of riparian and wetland areas of regional significance, and will not initiate any action that could result in a net decrease in park wetlands. The District will encourage public access to the Bay/Delta shoreline, but will control access to riparian and wetland areas, when necessary, to protect natural resources.
- The District will continue to plan, develop and provide a regional system of aquatic facilities at parks that can support these activities. The District will strive to improve public access to lakes and to the San Francisco Bay and Delta shorelines for boating and fishing, and will increase access to swimming beaches.
- The District will acquire property in accordance with the Master Plan 1997, giving careful consideration to operating and program needs, the District's financial position, timing factors

that affect the sale of the property, and opportunities provided under Measure AA and any subsequent funding measures.

- Regional Trails will connect regional parks or trails to each other; to parks and trails of other agencies; or to areas of unusual scenic beauty, vista points, San Francisco Bay, Delta or lake shoreline, natural or historic resources, or similar areas of regional significance. Regional Trails may also connect regional parks and trails to destinations such as transit centers, schools, colleges, civic centers, other major institutions, employment centers, large commercial complexes, or residential areas. A regional water trail may provide a water connection with launching and landing sites for small watercraft to points along the San Francisco Bay shoreline and/or the Sacramento/San Joaquin River and Delta.
- To protect park resources while providing for regional recreational use and access, the District will prepare plans (Land Use Plans or System-wide Plans) that describe the various levels of resource protection and recreational intensity in the parks, development projects, and land management strategies for trails and parks. Planning efforts will include consideration of proposals from the public. The District will strive to create and maintain up-to date information about each of its parks. Significant changes or amendments to adopted plans will require further public comment and Board action.
- Complete key park and trail projects in the eastern part of the District to serve newly annexed areas and anticipate urban growth. Where possible, enhance facilities, services, and programs provided by other agencies.
- Complete the missing sections of the Bay Area Ridge Trail and the San Francisco Bay Trail.

Suisun Marsh Protection Plan

The Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974 called for the San Francisco Bay Conservation and Development Commission and CDFW to prepare the *Suisun Marsh Protection Plan* (San Francisco Bay Conservation and Development Commission 1976). Adopted in 1976, the plan includes findings and policies for a number of resources, as well as a plan implementation program. The following policies (as amended in November 2007) address recreation and public access.

- **Policy 1:** Continued recreational use of privately-owned managed wetlands should be encouraged. Additional land should be acquired within the Suisun Marsh to provide for increased public recreational use and additional refuge areas for waterfowl during the hunting season. Acquisition priority should be given to those lands not now operated as managed wetlands.
- **Policy 2:** Land should also be purchased for public recreation and access to the Marsh for such uses as fishing boat launching and nature study. These areas should be located on the outer portions of the Marsh near the population centers and easily accessible from existing roads. Improvements for public use should be consistent with protection of wildlife resources.
- **Policy 3:** Public agencies acquiring land in the marsh for public access and recreational use should provide for a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking, and nature study.
- **Policy 4:** Agencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintained litter receptacles at major public use areas should be provided by the

appropriate local or State agency to prevent littering and vandalism to public and private property.

- **Policy 5:** Recreational activities that could result in adverse impacts to the environment or aesthetic qualities of the Suisun Marsh should not be permitted. Levels of use should also be monitored to insure that their intensity is compatible with other recreation activities and with protection of the Marsh environment. For example, boat speeds and excessive noise should be controlled and activities such as water skiing and naval training exercises should be kept at an acceptable level.

The Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties

The Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties (Blueprint Report) stemmed from Senate Bill 1556, which requires DPC to facilitate the planning and feasibility process for establishment of the Great California Delta Trail System. The Great California Delta Trail System is described in Section 15.2.2.2, *Delta Protection Commission, Great California Delta Trail System*.

The Blueprint Report, adopted on September 23, 2010, reflects a specific vision, goals, outreach, feasibility, the planning process, action plan, and policies for a recreational corridor through the two counties. The Blueprint Report reflects a process developed through work with a broad cross section of local agencies and stakeholder groups. The Blueprint Report is intended to lay the groundwork for more detailed planning and implementation in Contra Costa and Solano Counties, and for the extension of the trail system in other counties. The Blueprint Report does not provide specific trail alignments (although it has identified 1,545 miles of existing trails); its focus is on developing the planning and feasibility process. The Blueprint Report's vision, developed with input by the Solano and Contra Costa County Technical Advisory and Stakeholder Advisory Committees in January 2010, was created to support recreation and tourism; safer access to community centers, parks, schools, neighborhoods, businesses and tourism facilities for bicyclists, pedestrians, and people with disabilities; healthier lifestyles; appreciation of the Delta heritage, and appreciation of the natural and agriculture resources of the Delta. In support of the vision, the Blueprint Report established 11 goals and 68 policies. Following are the Blueprint Report's goals and abbreviated policies for each.

- **Goal 1**: Community Benefits—Supporting policies include creating a sense of pride; supporting recreation and tourism; providing safe routes of travel; developing awareness and appreciation of the Delta; and supporting economic opportunities.
- **Goal 2**: Outreach and Engagement—Supporting policies include informing the public about the value and benefit of the Delta Trail system; facilitating the exchange of information; and enabling a better understanding of the opportunities and issues.
- **Goal 3**: Connections to Regional and Local Destinations—Supporting policies include establishing and enhancing region trail connections; developing a hierarchy of trails and linkages; seamlessly connecting regional trails; and providing safe crossings.
- **Goal 4:** Compatibility with Existing Land Uses—Supporting policies include the use of existing public lands, easements, and public rights-of-way whenever possible; protecting agricultural viability; and avoiding trespassing on private property and environmentally sensitive areas.

- **Goal 5**: Provide Equitable Access—Supporting policies include developing trails that accommodate people of all abilities and providing access to a wide variety of recreational facilities, corridors, resources, and points of interest.
- **Goal 6:** Education and Encouragement—Supporting policies include providing educational opportunities along the trail; promoting the use of the trail for health and transportation benefits; promoting clear orientation, signage, and wayfinding along the trail system; and the integration of state and local recreational opportunities.
- **Goal 7:** Partnership and Momentum—Supporting policies include maintaining project momentum; coordinating trail planning and development; integrating the Delta Trail within the California Recreational Trails Plan; encouraging cities and counties to add policies and alignments into general plans, etc.; integration with other Delta projects; coordination with other organizations; and encouraging private landowners to dedicate public trail easements.
- **Goal 8:** Environmental Sustainability and Stewardship—Supporting policies include planning and designing trails to avoid or minimize environmental impacts; using "green" design practices; and supporting walking and biking to reduce automobile congestion and improve air and water quality.
- **Goal 9:** Quality Design and Implementation—Supporting policies include complying with guidelines and best practices for crossings; encouraging and accommodating different trail users; providing a consistent design or identity theme; providing convenient and safe access points; inclusion of barriers to minimize impacts on adjacent lands; providing regulatory quality signage; and planning and designing trails with consideration of rising sea levels.
- **Goal 10:** Adequate Funding—Supporting policies include providing adequate funding; prioritizing funding to allow for early adoption of key segments; actively monitoring and responding to grant opportunities; establishing endowments for maintenance and operations; coordinating and partnering with other entities such as schools, etc.; and actively involve volunteer groups.
- **Goal 11:** Quality Operations and Maintenance—Supporting policies include the preparation of a management plan; designating allowable uses based upon demand; actively involving volunteer groups; ensuring adequate emergency access; increasing awareness of tidal changes; and developing educational programs and volunteer trail patrols.

The Blueprint Report also identifies issues affecting implementation of a trail system of this scale, such as public safety and liability, private property impacts and liability, property access and land use conflicts, agricultural resources, levee integrity and maintenance, water quality, environmental resources, funding, and trail design.

15.3 Environmental Consequences

This section describes the potential effects on recreation that would result from project construction, operation, and maintenance, and describes on a programmatic level the effects that would result from proposed restoration activities.

15.3.1 Methods for Analysis

15.3.1.1 Assessment Methods

Conservation Measure 1 and Alternatives 4A, 2D, and 5A

The assessment methods for Conservation Measure (CM) 1, and Alternatives 2D, 4A, and 5A, which don't include CMs, evaluate effects on recreation resources resulting from the construction, operation, and maintenance of facilities as they affect the following.

- Recreational activities (water-dependent, water-enhanced, and land-based) and opportunities in the study area that are near action alternative facilities.
- Water-dependent (e.g., boating and swimming) and water-enhanced recreation opportunities at major north-of-Delta reservoirs and major SWP/CVP south-of-Delta reservoirs that may be affected by changed operations under the action alternatives.

Effects on recreation were assessed by identifying recreation areas that fall within the construction footprint to evaluate whether recreation sites or facilities would be permanently displaced by the proposed water conveyance facilities. In addition, the effects on recreation sites or uses within certain distances of construction activity were evaluated to assess the potential for construction-related disturbances to recreation opportunities because of changes to the visual setting and elevated noise levels that could occur during construction of the proposed facilities. These impact areas were primarily based on the analysis described in Chapter 23, *Noise,* Section 23.3.3 (see Table 23-16. *Predicted Noise Levels from Construction Activities* and Table 23-17. *Predicted Noise Levels from Construction—Pile Driving and Construction Equipment for Intake Structures*). These impact areas were determined using GIS sources to evaluate the potential for degradation of the recreation setting due to construction or operations and maintenance of the action alternatives.

Effects on recreation that could occur during construction of action alternative facilities were evaluated qualitatively. Construction activities could result in a short-term loss of recreation opportunities (2 years or less) by disrupting use of recreation areas or facilities. A long-term effect (more than 2 years) could occur if a recreation opportunity is substantially changed or eliminated due to the presence of construction-related activities and noise or the opportunity is fully eliminated as a result of placement of water conveyance structure(s) on or adjacent to a recreation area or facility. Effects on recreation that could occur as a result of maintenance and operation of the water conveyance facilities were also evaluated qualitatively. Maintenance activities could result in short-term loss of recreation opportunities by disrupting use of recreation areas or facilities and operation of the pump stations could result in noise levels that affect recreation areas.

In addition, operating the action alternatives could result in changes in reservoir storage and river flows in the study area. The resulting change in reservoir storage could change the frequency and duration that reservoir levels are within acceptable ranges or above the minimum level necessary to conduct recreational activities (Table 15-9).

Table 15-9. Recreation Opportunity Thresholds for North-of-Delta and South-of-Delta Recreation Resources

Water Resource	Elevation (feet) when Full	Recreation Water Surface Elevation Thresholds[a, b]
Folsom Lake	466 ft msl	405 ft msl—marina closes
Shasta Lake	1,067 ft msl	<967 ft msl—limited surface area (boating constrained)
Trinity Lake	2,370 ft msl	2,270 ft msl—recreation opportunities limited
Lake Oroville	900 ft msl	700 ft msl—boating opportunities limited
San Luis Reservoir	543 ft msl	360 ft msl—boating impaired
New Melones Reservoir	1,090 ft msl	900 ft msl—boating impaired

[a] Thresholds are measured in feet above mean sea level (msl) for reservoirs.
[b] Hereafter, this threshold is referred to as "Recreation Threshold"

The analysis focuses on a level at which the recreation experience would be degraded at those reservoirs that would experience operational changes as a result of the operation of the action alternatives: Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir. These reservoirs could experience slight variations in the storage and elevation patterns due to the operation of the action alternatives. North-of-Delta reservoirs that are below these reservoirs including Lewiston, Whiskeytown, Keswick, Thermalito Forebay and Afterbay, and Natoma are operated with a seasonal storage pattern (elevations) with very small variation from year to year.

The evaluation of effects on water-dependent recreation was conducted by comparing the CALSIM II hydrological modeling results for each alternative with the reservoir storage recreation thresholds. A brief overview of the modeling tools and outputs is provided in Chapter 4, *Approach to the Environmental Analysis*, Section 4.3, and a full description of these tools is provided in Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*. Also see Chapter 5, *Water Supply*, Section 5.1.1, for additional discussion related to operation of the SWP and CVP reservoirs for water supply purposes and for explanation of conditions related to sea level rise and climate change. The results of the simulations are compared and discussed in the following manner.

- Existing Conditions (without sea level rise or climate change) and action alternatives (with sea level rise and climate change that would occur at around Year 2060).
- No Action Alternative Late Long-Term (LLT) (with sea level rise and climate change) and action alternatives (with sea level rise and climate change that would occur at around Year 2060), for CM1.
- No Action Alternative Early Long Term (ELT) (with sea level rise and climate change) and action alternatives (with sea level rise and climate change that would occur at around Year 2025), for Alternatives 2D, 4A, and 5A.

The results of the comparison of Existing Conditions and No Action Alternative to the action alternatives reflect differences in exceeding recreation reservoir thresholds due to the difference in SWP/CVP reservoir elevations because of the following two changes.

- Changes in SWP/CVP operations because of the action alternative.
- Changes in SWP/CVP operations because of sea level rise and climate change.

As discussed in Chapter 5, *Water Supply,* in evaluating effects under different SWP/CVP operational scenarios around Year 2060 conditions, readers should be aware that some of the differences between those anticipated future conditions and Existing Conditions for CEQA are solely attributable to sea level rise and climate change, and not to the action alternative operational scenarios. The results depicting differences between action alternatives scenarios under year 2060 conditions and the CEQA baseline may therefore seem to exaggerate the effects of proposed operational changes. In these results, some portion of the environmental changes depicted are solely attributable to sea level rise and climate change (i.e., anticipated reductions in snowfall and effects on precipitation generally). Please refer to Chapter 5, *Water Supply*, for additional discussion of changes due to sea level rise and effects due to climate change.

For each action alternative, the following comparisons are presented for a quantitative discussion of changes in reservoir elevations relative to recreation reservoir elevation thresholds. The significance of impacts on recreation activities occurring at reservoirs is based on the change in end-of-September surface elevations attributable to operation of each alternative. Changes in reservoir storage as a result of sea level rise and climate change were not attributable to the operation of each alternative.

Comparison of each action alternative (2060) to Existing Conditions (CEQA baseline), shows changes in SWP/CVP reservoir elevations that are caused by three factors: sea level rise, climate change, and implementation of the action alternative. Comparison of each action alternative (2060) to No Action Alternative LLT (2060) and No Action Alternative ELT (2025) will indicate the general extent of changes in SWP/CVP reservoir levels and related recreation conditions due to implementation of the action alternatives. Because sea level rise and climate change are reflected in each action alternative and in the No Action Alternative (ELT and LLT), this comparison allows isolation of the extent of changes in SWP/CVP reservoir elevations attributable to the differences in operational scenarios amongst the different action alternatives.

Conservation Measures 2 through 21 and Environmental Commitments

For the BDCP alternatives, the assessment methods for CM2–CM21 programmatically evaluate effects of conservation measures on recreation. Generally, near-term (2020) effects would result from construction activities to create habitat or other facilities associated with the conservation measures. Early long-term and late long-term effects would result from the continual growth and establishment of habitats or long term operation of facilities. Effects were considered by Conservation Zone (CZ) and Restoration Opportunity Areas (ROAs) for the following.

- Recreational activities (water-dependent, water-enhanced, and land-based) and opportunities in the study area near habitat restoration sites or other conservation measure facilities.
- Fishing activities and opportunities in the study area.

The BDCP Implementation Office would implement measures to avoid and minimize effects on covered species and natural communities that could result from BDCP covered activities. The avoidance and minimization measures (AMMs) that would be implemented through this framework are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures*.[1] These measures would be implemented for covered activities throughout the BDCP permit term. These AMMs would be

[1] As described in Chapter 1, *Introduction*, Section 1.1, the Final EIR/EIS includes the 2013 Draft EIR/EIS, BDCP, 2015 RDEIR/SDEIS, and all associated appendices with these documents; as well as revisions to these documents as contained in this Final EIR/EIS.

implemented under all action alternatives but would not be expected to result in any meaningful effects on recreation sites, opportunities, or experiences in the study area because they either involve planning, surveying, or other non-land-based activities; or involve implementation of short-term and localized best management practices to protect covered species but would not disrupt recreation activities in the study area.

As described in detail in Section 3.5.18.3 of Chapter 3, *Description of Alternatives,* portions of the actions proposed under CM3, CM4, CM6, CM7, CM8, CM9, CM10, CM11, CM12, CM15, and CM16 would be included in Alternatives 2D, 4A, and 5A. However, these activities would not be "conservation measures." The term "conservation measure" is often used in the context of Habitat Conservation Plans under Section 10(a)(2) of the Endangered Species Act (ESA) and Natural Community Conservation Plans under the Natural Community Conservation Planning Act. As noted, these Environmental Commitments are actions primarily intended to satisfy CEQA, California Endangered Species Act (CESA) Section 2081, and ESA Section 7. This Final EIR/EIS describes and analyzes Environmental Commitments 3, 4, 6–12, 15, and 16 at a level of detail consistent with that applied to these activities under the BDCP alternatives (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9). Specific locations for implementing many of the activities associated with these commitments have not been identified at this time. Therefore, the analyses considers typical construction, operation, and maintenance activities that would be undertaken for implementation of the habitat restoration and enhancement and stressor reduction efforts. Where appropriate and necessary, implementation of individual projects associated with an Environmental Commitment would be subject to additional environmental review. Additionally, pertinent elements included as AMMs and the proposed Adaptive Management and Monitoring Program would be implemented as applicable during the activities proposed under Alternatives 2D, 4A, and 5A (the non-HCP alternatives).

15.3.2 Determination of Effects

The criteria used for determining the significance of an effect on recreational resources are based on Appendix G of the State CEQA Guidelines (Environmental Checklist) and professional standards and practices. Effects on both water-dependent and water-enhanced recreation opportunities may be considered adverse for purposes of the National Environmental Policy Act (NEPA) and significant for purposes of CEQA if an alternative would result in any one of the following conditions.

- Locate alternative facilities that would result in the permanent displacement of well-established recreational facilities. For purposes of this analysis, the permanent displacement of a well-established recreation facility is defined as circumstances in which construction or operational activities would result in the permanent loss or closure of such facility or activity.
- Result in substantial long-term reduction of recreation opportunities and experiences, such as reduce the amount of area available for a particular type of recreation. Recreation experiences in the study area include consideration of visual effects attributable to construction and operation activities associated with water conveyance facilities. For purposes of this analysis, the long-term loss of recreation opportunities and experiences is defined as circumstances in which construction or operations and maintenance activities would result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years.

- Cause a change in river flows or reservoir elevations that would result in substantial reductions in water-based recreation opportunities. For the purposes of this analysis, effects on water-dependent and water-enhanced recreation activities at reservoirs are considered substantial or adverse if there would be a 10% or greater (more than 8 years) reduction in the frequency of recreation facility availability, using the reservoir recreation thresholds (Table 15-9), attributable to action alternative operations (U.S. Fish and Wildlife Service et al. 1999:3-281–3-282). An increase or decrease in the frequency at which reservoir levels exceed the recreation reservoir elevation threshold of less than 10% (8 years or fewer), attributable to action alternative, operations would not be adverse. An increase in the frequency at which reservoir levels exceed the recreation reservoir elevation threshold attributable to action alternative operations, is considered a beneficial effect on the recreation activities and experience.
- Cause an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. For purposes of this analysis, substantial physical deterioration is defined as circumstances in which construction or operational activities would increase study area population levels such that well established recreation facilities would deteriorate at an accelerated rate resulting in loss of use of neighborhood or regional park facilities.

In addition, constructing the proposed water conveyance facilities (CM1) and implementing the other conservation measures (CM2–CM21) could result in potential inconsistencies with plans and policies related to the protection of recreation resources in the Delta region. A number of plans and policies that coincide with the study area boundaries provide guidance for recreation issues as overviewed in Section 15.2, *Regulatory Setting*. The analysis of the alternatives provides an assessment of whether the alternatives are consistent or inconsistent with these plans and policies, rather than determining whether impacts would be adverse or not adverse or significant or less than significant. If an inconsistency relates to an applicable plan, policy, or regulation adopted to avoid or mitigate effects on recreation, then an inconsistency might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of the alternatives on resources are addressed in the impact discussions under each alternative and in other chapters, such as Chapter 23 *Noise*, Sections 23.3.3.2 through 23.3.3.16 and Sections 23.3.4.2 through 23.3.4.4, and Chapter 17, *Aesthetics and Visual Resources,* Sections 17.3.3.2 through 17.3.3.16 and Section 17.3.4.2 through 17.3.4.4.

15.3.3 Effects and Mitigation Approaches

Overall construction of the water conveyance facilities is expected to last up to 12 years for all alternatives except Alternatives 4 and 4A; construction under Alternatives 4 and 4A would last 13 years. Implementation of the other conservation measures would be ongoing for the term of the BDCP (50 years). Construction activities adjacent to or within certain recreation areas or sites could last from 1 to 7.5 years; activities that do not require removal of a recreation facility or permanent use of a site would be considered temporary effects. Temporary effects (loss of recreation opportunity) are considered short-term if the duration is 2 years or less, or long-term, if the duration is more than 2 years.

Chapter 16, *Socioeconomics*, Sections 16.3.3.2 through 16.3.3.16 and Sections 16.3.4.2 through 16.3.4.4, discuss tourism and recreation as economic drivers in the Delta region and how the potential effects of the alternatives on recreation opportunities discussed in this chapter could affect regional economics, community character, local government fiscal conditions, and recreation

economics as a result of constructing, operating and maintaining the proposed water conveyance facilities and conservation measures. The reader is referred to Chapter 16, *Socioeconomics*, Sections 16.3.3.2 through 16.3.3.16 and Sections 16.3.4.2 through 16.3.4.4, for further discussion of this topic.

Chapter 17, *Aesthetics and Visual Resources*, Sections 17.3.3.2 through 17.3.3.16 and Sections 17.3.4.2 through 17.3.4.4, discuss the long-term changes in the local visual setting on sensitive receptors from introduction of the alternative water conveyance facilities to the project area.

Chapter 20, *Public Services and Utilities*, Sections 20.3.3.2 through 20.3.3.16 and Sections 20.3.4.2 through 20.3.4.4, describe the estimated increase in study area population associated with construction of the action alternatives. It is anticipated that many of the construction jobs would be filled from the existing labor force in the five-county study area region although construction of the conveyance tunnels may require specialized skills resulting in recruitment of specially trained workers coming from outside this region. As described in Chapter 16, *Socioeconomics*, Section 16.3.3.2, Impact ECON-2, this additional population would constitute a minor increase in the total 2020 projected regional population of 4.6 million. Because the construction population would primarily come from the five-county labor force and because the minor increase in demand from the worker population that would move into the area for specialized jobs (e.g., tunnel construction) would be spread across the large multi-county study area, construction of the alternative is not anticipated to result in an increased demand or adverse effects on existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. This effect is not discussed further in this chapter.

Noise traffic modeling indicates that increased noise levels from construction truck hauling and worker commutes would result in substantial increases in local noise levels at nearby residences, parks and recreational uses. The project-related increase in noise levels would exceed the project threshold for traffic noise and would be considered an adverse effect. Mitigation Measures NOI-1a and NOI-1b are available to reduce this effect; however, implementation of feasible measures would not be available in all situations to reduce levels below applicable thresholds. The reader is referred to Chapter 23, *Noise*, for further discussion of these topics.

As discussed in Chapter 6, *Surface Water*, CALSIM modeling results indicate that effect on Sacramento and San Joaquin River flows would be less than significant. Additionally, the project would result in a reduction of reverse flow conditions in the Old and Middle Rivers, creating a positive change in the majority of months on a long-term average basis compared with Existing Conditions and the No Action Alternative. Therefore, these are not discussed further. North-of-Delta reservoirs (Lewiston, Whiskeytown, Keswick, Thermalito, and Natoma) and south-of-Delta reservoirs (Castaic Lake, Lake Perris, Pyramid Lake, Silverwood Lake, Castaic Lagoon) are currently operated with a seasonal storage pattern (elevations) with very small variation from year to year. Major San Joaquin Valley eastside reservoirs (i.e., Millerton lake, New Melones Reservoir, etc.) were not evaluated because water system operations would not be anticipated to result in a change in annual storage patterns. These operations would remain the same under all the action alternatives and no effects would occur as a result of implementing the alternatives. These reservoirs are not discussed further. Similarly, the action alternatives are not expected to result in a substantial decrease or increase in Delta surface water levels; therefore, surface water elevations are not discussed further in this chapter. Please refer to Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for more information.

15.3.3.1 No Action Alternative

The No Action Alternative considers changes in recreation that would occur due to the continuation of existing plans, policies, and operations by federal, state, and local agencies as of the year 2060. The No Action Alternative includes projects and programs with defined management and/or operational plans, including facilities under construction as of February 13, 2009, because those actions would be consistent with the continuation of existing management direction or level of management for plans, policies, and operations by the NEPA lead agencies and other agencies. The No Action Alternative assumptions also include projects and programs that received approvals and permits in 2009 to remain consistent with existing management direction. A more comprehensive list of projects and programs are listed in Appendix 3D, *Defining Existing Conditions, the No Action/ Alternative, No Project Alternative, and Cumulative Impact Conditions.* The No Action Alternative would result in the following effects on recreation.

Delta Water-Dependent Recreation

Temporary effects on water-dependent recreation include restrictions on boat passage and navigation during construction and operation of in-water projects. Future projects include the North Bay Aqueduct Alternative Intake Project and Sacramento Deep Water Ship Channel Dredging Program. These projects could adversely affect water-dependent recreation by restricting boating access and passage during the construction phases by placing structures and construction equipment within Delta waterways. Projects such as the Clifton Court Forebay Fishing Facility, when in place, would increase recreational opportunities in the Delta, as listed in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions.* Ongoing projects and programs include the operation of the Delta Cross Channel, the South Delta Temporary Barriers Program, the Georgiana Slough Non-Physical Fish Screen, and construction of wildlife habitat in Suisun Marsh or elsewhere as a result of implementation of the USFWS and National Marine Fisheries Service (NMFS) Biological Opinions. These projects and programs, when in place or during construction, would also adversely affect water-dependent recreation by hindering boat passage and access to portions of the Delta's waterways.

Localized effects on water-dependent recreation, such as a decrease in recreational fishing, may occur during construction or installation phases of these projects as a result of loss of access to the water resources. Other effects on fishing may occur as a result of changes in sport fish abundance not directly attributable to the construction or operation of in-Delta facilities. Environmental conditions occurring within upstream rivers and reservoirs, the Delta, and ocean may adversely affect the abundance of sport-fish harvested within the Delta.

Other ongoing resources management plans may benefit water-dependent recreation by controlling nonnative aquatic vegetation such as *Egeria densa* and water hyacinth. These programs help maintain access to some Delta waterways that could otherwise be inaccessible because of the presence of dense aquatic vegetation.

DPR has prepared the *Recreational Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* that includes recommendations for improvements and expansion of four Delta state recreation areas and six other state parks on the edge of the Delta and Suisun Marsh. While funding is not yet identified for implementation, any future implementation would include improvements to existing land- and water-based recreational activities in the Delta (California Department of Parks and Recreation 2011d).

Delta Land-Based Recreation

Ongoing restoration and environmental enhancement projects may benefit non-consumptive recreation within the Delta. These projects include recently completed, ongoing, or planned restoration and enhancement projects within the North Delta, Lower Yolo Bypass, and Suisun Marsh and implementation of land management plans for Stone Lakes NWR, Yolo Bypass, and Lower Sherman Island. These restoration projects may enhance wildlife viewing, non-motorized boating, and other passive recreation opportunities within the Delta by increasing wildlife habitat and public access. The implementation of land management plans for public lands provide direction for recreation and may also lead to the installation of additional recreation facilities that provide either new or enhanced opportunities for recreation and an enhanced recreation setting. Long-term adverse effects on recreation opportunities and experiences also include those related to sea level rise and the resulting inundation of many water-based facilities in the Delta.

Other land-based recreation activities are expected to increase in response to changes in local and regional demand. These activities include agritourism, wine tasting, historic and cultural tourism, bicycling, and driving for pleasure (Delta Stewardship Council 2013).

Recreation Upstream of the Delta

Beneficial effects include those on recreation opportunities and experiences from probable future projects and programs such as the hatchery and stocking programs; the Red Bluff Diversion Dam Fish Passage Project; the Battle Creek Salmon and Steelhead Restoration Project; the American Basin Fish Screen and Habitat Improvement Project; stormwater management programs; and implementation of the San Joaquin River Restoration Program. These programs could enhance recreation by increasing the abundance of sport fish. Conditions occurring within upstream rivers and reservoirs (e.g., river flows, reservoir storage, river and reservoir water temperature, water quality) can also affect the abundance of sport fish and conditions suitable for river and reservoir boating or other water-dependent recreation activities. Lower reservoir storage and river flows and reduced water quality conditions could result in adverse effects on recreation opportunities.

CALSIM II output was used to help evaluate the potential changes in north-of-Delta and south-of-Delta reservoirs where recreation opportunities could be affected by the alternatives, including the No Action Alternative. The results are shown in Table 15-10a and Table 15-10b. Also see Chapter 3, *Description of Alternatives,* Section 3.5.1, for detailed information on the No Action Alternative, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to No Action Alternative

As shown in Table 15-10a and Table 15-10b, No Action Alternative conditions would have more years in which reservoir levels fall below the recreation threshold relative to the existing condition (CEQA baseline). Under the No Action conditions, the reservoirs would fall below the thresholds from 4 to 28 additional years than under Existing Conditions. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and future no action conditions. It is not possible to specifically define the exact extent of the changes due to future no action operations using these model simulation results. Thus, the precise contributions of sea level

rise and climate change to the total differences between Existing Conditions and No Action Alternative cannot be isolated in this comparison.

Table 15-10a. Summary of SWP and CVP Reservoir Recreation Opportunities (years below end-of-September recreation threshold) for Existing Conditions and the No Action Alternative

	Recreation Threshold[a]					
	Trinity Lake <2,270 ft elevation		Shasta Lake <967 ft elevation		Lake Oroville <700 ft elevation	
	Years[b]	Change relative to Existing Condition (CEQA)[c]	Years[b]	Change relative to Existing Condition (CEQA)[c]	Years[b]	Change relative to Existing Condition (CEQA)[c]
Existing Condition (CEQA)	21		17		17	
No Action (2060)	43	22	29	12	32	15

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected BDCP alternative scenario. An elevation less than the recreation threshold indicates years during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action Alternative). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Table 15-10b. Summary of SWP and CVP Reservoir Recreation Opportunities (years below end-of-September recreation threshold) for Existing Conditions and the No Action Alternative

	Recreation Threshold[a]					
	Folsom Lake <405 ft elevation		New Melones Lake <900 ft elevation		San Luis Reservoir <360 ft elevation	
	Years[b]	Change relative to Existing Condition (CEQA)[c]	Years[b]	Change relative to Existing Condition (CEQA)[c]	Years[b]	Change relative to Existing Condition (CEQA)[c]
Existing Condition (CEQA)	22		9		3	
No Action (2060)	50	28	13	4	9	6

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected BDCP alternative scenario. An elevation less than the recreation threshold indicates years during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action Alternative). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Summary

The CALSIM II modeling results show that, overall, future opportunities for boating-related recreation under the No Action Alternative conditions at these reservoirs would be less than under the Existing Conditions. However, as noted above and discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and future no action conditions. It is not possible to specifically define the exact extent of the changes due to future no action operations using these model simulation results.

As described in Chapter 3, *Description of Alternatives*, many of the ongoing programs include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA, the federal ESA, and other federal laws and regulations. Future state and local actions would be required to comply with CEQA, CESA, and other state and local laws and regulations. Compliance and permit requirements would be implemented on a case-by-case basis.

Catastrophic Seismic Risks

The Delta and vicinity are within a highly active seismic area, with a generally high potential for future earthquake events along nearby and/or regional faults, and with the probability for such events increasing over time. Based on the location, extent and non-engineered nature of many existing levee structures in the Delta area, the potential for significant damage to, or failure of, these structures during a local seismic event is generally moderate to high. Levees constructed on liquefiable foundations are expected to experience large deformations (in excess of 10 feet) under a moderate to large earthquake in the region. Earthquake damage could result in breaching/failure of existing levees within the Delta area, with a substantial number of these structures exhibiting moderate to high failure probabilities. The most immediate and significant effect to water quality under such a scenario would be the influx of large volumes of seawater and/or brackish water into the Delta, which would alter the "normal" balance of freshwater/seawater flows and result in flooding of the associated islands. The corresponding shift in Delta water quality conditions would be characterized by an increase in salinity levels, including specific associated constituents such as bromide (which affects total dissolved solids concentrations and can contribute to the formation of undesirable chemical byproducts in treated drinking water). (See Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, for more detailed discussion). This could result in permanent displacement of existing, well-established public use or private commercial recreation facilities as well as result in long-term reduction of recreation opportunities, recreational navigation opportunities and recreational fishing opportunities. To reclaim land or rebuild levees after a catastrophic event due to climate change or a seismic event would potentially also result in adverse impacts to recreational resources.

***CEQA Conclusion*:** Overall, the ongoing projects, programs, and plans under the No Action Alternative would result in the potential for temporary and permanent effects on the study area recreation activities that are not expected to substantially change recreation opportunities or experiences in the Delta region. Effects on recreation would either be only short-term disruptions that would be considered less-than-significant impacts or the programs would result in net beneficial effects on recreation opportunities. There would be no BDCP-related disruption to existing recreation activities because there would be no construction of the action alternatives. This impact would be less than significant.

Additionally, as shown in Table 15-10a and Table 15-10b, No Action Alternative conditions would have more years in which reservoir levels fall below the recreation threshold relative to the existing condition (CEQA baseline). Under the No Action conditions, the reservoirs would fall below the thresholds from 4 to 28 additional years than under Existing Conditions. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and future no action conditions. It is not possible to specifically define the exact extent of the changes due to future no action operations using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and No Action Alternative cannot be isolated in this comparison.

15.3.3.2 Alternative 1A—Dual Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario A)

Alternative 1A includes the construction of the five north Delta intake facilities (Intakes 1–5) between River Mile (RM) 44 (south of Freeport) and RM 37 (north of the town of Courtland). Table 15-11 lists the recreation sites and areas that may be affected by Alternative 1A. No recreation sites fall within the construction footprint (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed below.

Table 15-11. Recreation Sites Potentially Affected by Construction of Alternative 1A

Recreation Site or Area	Primary Alternative Feature	Potential Impact Source	Duration
Clarksburg Boat Launch (fishing access)	Intake 3 and transmission lines	Noise and visual disturbances	Ongoing; up to 5 years (long term)
Stone Lakes NWR	Potential borrow area between Intakes 1 and 2; Intakes 2, 3 and 4 and associated work areas; intermediate forebay and related work areas	Noise and visual disturbances	Ongoing; up to 5 years (long term)
Georgiana Slough Fishing Access	Tunnel easement, safe haven work area, temporary transmission line, and temporary access road	Noise	Intermittent; up to 2 years (short term)
Cosumnes River Preserve (Private Lands)	Temporary transmission lines; safe haven work area; permanent and temporary access roads (on Tyler Island along tunnel alignment)	Noise	N/A—no recreation use in area affected
	Reusable tunnel material area; barge unloading facility; concrete batch plant (on Tyler Island)		
	Temporary access road, safe haven work area, temporary transmission line (within the preserve)		
Bullfrog Landing (Marina)	Transmission line, permanent access road	Noise, access	Less than 2 years (short term)
Whiskey Slough Harbor Marina	Permanent access road	Noise, access	Less than 2 years (short term)
Clifton Court Forebay	Byron Tract Forebay, control structures and associated work areas	Noise and visual disturbances	Up to 2 years (short term)
Clifton Court Forebay	Byron Tract Forebay pumping plant canal approach structures	Noise	Up to 1 year (short term)

Sources: GIS data layers available from DWR: CPAD, Green Info Network 2011; USFWS Boundaries, USFWS 2012; Recreation Areas, AECOM/ICF 2012; Recreation Facilities, AECOM/ICF 2012.

Note: Construction duration information is approximate and subject to further revision.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** The proposed location of the Alternative 1A five intake facilities, tunnels, and associated water conveyance facilities would not lie within the designated boundaries of an existing public use recreation site. The post-construction location of the water conveyance facilities would not result in long-term disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.2, and Chapter 23, *Noise*, Section 23.3.3.2, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** No recreation sites are within the construction footprint. A total of seven recreation sites are within the 1,200 to 1,400-foot indirect impact area associated with aboveground construction of the proposed water conveyance facilities (CM1) (see Chapter 23, *Noise*, Section 23.3.3.2, Impact NOI-1). The Cosumnes River Preserve does not have public use facilities that fall within the impact area although wildlife viewing opportunities could be affected. The effects that could occur at each potentially affected recreation site are discussed below. Potential indirect effects on recreation include reduced access, construction noise, and changes in the visual character of the area surrounding the recreation sites. Also see Chapters 12, *Terrestrial and Biological Resources*, 17, *Socioeconomics*, 19, *Transportation*, and 23, *Noise*, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively.

Clarksburg Boat Launch (Fishing Access)

The Clarksburg Boat Launch is on the west bank of the Sacramento River across the river from the proposed Intake 3 site. Access to the Clarksburg Boat Launch would be maintained using County Road E9 (also referred to as County Highway); access would not be expected to be a concern because most of the construction activity would take place on the east side of the Sacramento River. On-water access to the fishing site, as well as use of the boat ramp, would not be affected by construction. Indirect construction noise effects on recreation in the vicinity of the Clarksburg Boat Launch would last about 4 years with construction of the intake and related facilities primarily ongoing Monday through Friday for up to 24 hours each day. In addition, because of the relatively high groundwater level at all intake locations and pumping plant sites, dewatering would be necessary to provide a dry workspace. Dewatering would also be needed where intake pipelines cross waterways and irrigation canals east of the Sacramento River. The conveyance pipeline between Intake 1 and tunnel 1 crosses three canals or ditches. Two of these would be a half mile south of the facility grounds for Intake 1 (or nearer) and the other would be about 0.4 miles north northwest of Scribner Road. As discussed in Chapter 3, *Description of Alternatives*, Section 3.6.1, dewatering would take place 7 days per week and 24 hours per day. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels. Construction of the intake in this area would be long term and would also substantially alter the recreation experience due to changes in views from the boat launch/fishing access site.

Stone Lakes National Wildlife Refuge

There will be indirect impacts to private and public use areas within the Stone Lakes NWR. No public recreation facilities are located on the privately held lands of the NWR (U.S. Fish and Wildlife Service 2007a). The public use areas of Stone Lakes NWR include the Beach Lake and North Stone Lake Units of the NWR.

Because of the proximity of the alignment and associated construction work areas and borrow/spoil areas, there could be effects on wildlife viewing and environmental education opportunities within

the Stone Lakes NWR. Because construction would primarily occur Monday through Friday, year-round, there could be temporary effects on wildlife viewing and some environmental education opportunities that depend on the presence of wildlife. Hiking, interpretation, and some environmental education opportunities would still be feasible within the NWR; however, the recreation experience of refuge visitors may be affected by construction noise, potentially resulting in reduced opportunities for wildlife viewing and visual disruptions.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Georgiana Slough Fishing Access

The Georgiana Slough Fishing Access is directly east of the Alternative 1A tunnel alignment but would not be affected by underground tunnel construction. A tunnel easement work area, temporary access road and transmission line are north (upstream) of and on the opposite bank of the slough. Access to the fishing site would be maintained using Andrus Island Road or a detour. On-water access to the site, as well as use of the boat ramp, would not be affected by activities downstream, upstream, or across the river. The northern area of the fishing access is just at the boundary of the anticipated noise impact area and it would be expected there would be minimal if any noise disruption at the fishing access site. The tunnel work area across the slough would not be visible from the fishing access; therefore, it would have no visual effect on the recreation setting or experience. Boaters upstream of the fishing access would temporarily experience intermittent and short-term effects from the construction at the tunnel access area. Overall, this is generally not expected to be an adverse effect in this location because of the intermittent nature of work in this area and the shorter duration of construction (up to 2 years).

Cosumnes River Preserve (Private Lands)

While the Cosumnes River Preserve provides opportunities for limited fishing and hunting, hiking, paddling, wildlife viewing, and environmental education, public access is concentrated around the visitor center which is located approximately 5 miles east of the alternative alignment. Nearly all public recreation activities would be outside of the construction impact areas. Construction primarily would take place Monday through Friday, for up to 24 hours per day with dewatering 7 days per week and 24 hours per day. Construction noise could affect wildlife viewing and environmental education opportunities for docent guided tours. The recreation experience of

visitors may also be adversely affected by construction activities from noise disturbances. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Bullfrog Landing Marina

Containing 43 berths, the Bullfrog Landing marina is on Middle River within the construction impact area surrounding the tunnel/pipeline alignment across Bacon Island. The marina is southeast of the terminus of a permanent access road to a ventilation/access shaft for the tunnel/pipeline and immediately west of a proposed 69 kV transmission line corridor. Vehicular access to the marina would be maintained using Bacon Island Road or a detour, although there may be additional truck traffic on Bacon Island Road. On-water access to the marina and use of the marina's boating facilities would not be affected by tunnel/pipeline construction activities. Boating opportunities would still be feasible at the marina during construction of the tunnel/pipeline and permanent access road. Construction of the access roads and installation of the transmission lines would both take up to 2 years, which would be considered a short-term effect (2 years or less). During construction it is possible that marina users would be disturbed by noise and visual disruptions related to the construction activities. Marina visitors arriving from upstream, who would pass by construction of the new access road, may encounter construction noise, as would any anglers on the river between the marina and the construction area.

Whiskey Slough Harbor Marina

Whiskey Slough Harbor Marina on Whiskey Slough provides 80 berths, a launch ramp, pump-out facilities and camping at the terminus of Whiskey Slough. The marina is immediately north of a portion of permanent access road. Vehicular access to the marina would be maintained using West Whiskey Slough Road or a detour. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction of the access road. Boating and camping opportunities would still be available at the marina during construction. Construction of the roadway would take less than 2 years (short term). Visual, access, and noise disturbances for boaters and others using the marina facilities, including campers, would not be considered adverse, because of the temporary and short-term duration.

Clifton Court Forebay

Clifton Court Forebay offers public fishing and hunting access from Lindeman Road on the west side of the forebay. There are no recreation facilities at the forebay; motorized boating, camping, and swimming are not allowed. Most fishing and hunting use at the forebay likely occurs along the west

and south areas of the forebay, although some visitors walk or ride a bike around the forebay to reach other fishing and hunting locations.

Access to the forebay would be maintained using Clifton Court Road or a detour. Construction of the Byron Tract forebay, control structures, and use of related spoils/borrow area and installation of transmission lines would take up to 2 years. Construction would primarily occur Monday through Friday for up to 24 hours per day. Construction noise could deter fish and wildlife during and after construction periods, affecting fishing and other recreational opportunities. The opportunities for visitors who use the southern part of the forebay would be affected the most because of its proximity to the proposed construction areas. Construction of the pumping plant approach canal segments would occur at a later time than the forebay and control structures—up to 3 years later—and would last for up to 1 year. The effects of this construction would be less than the initial forebay construction but could have similar short-term effects on recreation at the southern extent of the Clifton Court Forebay. Construction during waterfowl hunting season would affect recreational hunting in the area to the degree that use is temporarily degraded. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, mitigation would be available to address the effect on nesting birds and waterfowl populations near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

The construction areas for the new facilities would likely not be visible from the main public forebay access point; however, visitors at the southern part of the forebay would be able to see the construction areas, which could affect the recreation setting and detract from their recreation experiences. Construction noise and the resulting reduced opportunities for fishing or hunting could also affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intakes 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Storage sites are not within the construction noise impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of construction. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be

further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction could reduce the abundance of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a change recreation in recreation opportunities.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.2, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Construction of Alternative 1A intakes and water conveyance facilities would result in disruption of recreational opportunities that would last from 1 to 5 years. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction. Although construction may occur year-round and last up to 9 years, construction in the vicinity of identified recreation facilities would last from 1 to 5 years and in-river construction would be primarily limited to June 1 through October 31 each year.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide

suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2 *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and reusable tunnel material (RTM) area management plan (AES-1c), restoring barge unloading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's *Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities

would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments, although this mitigation measure (TRANS-1c) would require cooperation from the affected jurisdictions, and therefore there is no way to guarantee its effectiveness.

Chapter 23, *Noise*, Section 23.3.3.2, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure access to nearby fishing by enhancing formal fishing sites near the proposed water conveyance facilities, and providing adequate signage directing anglers to the formal sites. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 1A intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round and would occur over the long-term. Mitigation measures, environmental commitments, and BDCP AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Construction-related impacts on informal fishing access sites near the proposed water conveyance facilities, such as along the east bank of the Sacramento River, in the vicinity of the proposed intakes, in the vicinity of the expanded Clifton Court Forebay, and would be considered significant because construction would alter the river bank and/or restrict access,

making these sites unusable. To compensate for the loss of these informal sites during construction, the BDCP proponents will enhance nearby formal fishing access sites, including partnering with Yolo County to enhance the Clarksburg Fishing Access site on the west bank of the Sacramento River, with the Sacramento County Department of Regional Parks to enhance the Cliffhouse Fishing Access site on the east bank of the Sacramento River and the Georgiana Slough Fishing Access site east of the Sacramento River, and with Contra Costa County to enhance fishing sites near Clifton Court Forebay, as well as other nearby sites. Prior to construction of the proposed water conveyance facilities, the BDCP proponents will ensure adequate signage will be placed at the informal sites that would be directly affected by construction of the intakes, directing anglers to the formal sites. Upgrading the existing fishing access sites will be completed prior to beginning construction of the intakes.

Where intake locations would remove existing public access to the Sacramento River for recreational purposes, as part of design of the intakes, the BDCP proponents will ensure that public access to the Sacramento River, including fishing access, will be incorporated into the design of the intakes. The access sites will be placed a reasonable distance from the intake to ensure the safety of recreationists and to compensate for the loss that would occur as a result of constructing the intakes.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation on the Sacramento River and other waterways in the study area, including direct effects on boat passage related to the creation of obstructions and associated boat traffic delays, would occur during construction of Alternative 1A. Construction of the five intakes would involve installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Temporary barge unloading facilities would also affect navigation for recreationists.

Intakes

To allow for construction of intakes, cofferdams would be constructed within the river channel. The cofferdams would vary in size according to intake location, but would range from 740 to 2,440 feet in length and would extend into the river channel up to 120 feet, depending on location. This would include a 25-foot buffer zone around each cofferdam. Although boats would be unable to use the portion of the waterway where construction was occurring, the river in the vicinity of the intake construction sites would remain open to boat passage at all times. The river is approximately 500–700 feet wide near the proposed intakes, which would leave most of the channel width (approximately 380–580 feet) open to boat passage, providing ample room for the boat traffic observed to occur in the area to pass without difficulty and minimizing possible traffic congestion.

Temporary in-water construction zone restrictions would be in place. These measures would include a speed-restricted zone extending upstream and downstream of river construction areas to reduce wake and maintain a safe work area in the vicinity of the construction activities. Site-specific safety features, including determination of the speed-restriction zone, would be developed under the Mitigation Measure TRANS-1a, which involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Within the speed-restricted zones around the intake areas, high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Mitigation Measure TRANS-1a also involves providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps.

Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary reduced-speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, tubing, or fishing are also low, but effectively would be eliminated in the vicinity of the intakes for the duration of construction (up to 4 years at each intake location). However, implementation of separate, non-environmental commitments as set forth in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, relating to the enhancement of recreational access and control of aquatic weeds in the Delta would reduce these effects. Although there is sufficient width in the channel to allow boat passage, boaters could experience minor delays related to construction speed zones. Implementation of Mitigation Measure TRANS-1a to prepare a transportation management plan, including elements to address waterway navigation and to provide notification of construction activities in waterways would reduce these effects. However, this potential to result in a reduction of recreational navigation opportunities would be considered adverse because, although temporary, the effects would be long term, lasting more than 2 years.

Temporary Barge Unloading Facilities

Alternative 1A includes six barge unloading facilities to be built on or near the tunnel alignment at riverbank locations about 5–6 miles apart (except on Woodward Canal) (Mapbook Figure M15-1). The facilities would be built on the following waterways: Sacramento River, North Fork Mokelumne River, San Joaquin River, Middle River, and Woodward Canal (which would have two facilities). The facilities would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. All barge facilities would have temporary in-water construction zone restrictions including a speed-restricted zone extending upstream and downstream of construction within the waterway to reduce wake and maintain a safe work area in the vicinity of the construction activities. Site-specific safety features, including determination of the speed-restriction zone, and notification procedures would be developed under Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific transportation management plans, including waterway navigation elements. Within the speed-restricted zones high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Specific effects that could occur at each barge unloading facility site are discussed below. Effects on recreation in the vicinity of these sites would last approximately 5 years and would be considered a long-term effect. Construction would primarily occur Monday through Friday and last for up to 24 hours per day. In-river construction primarily would be limited to June 1 through October 31 each year. However, the barges would remain in place for the duration of the construction period and still present a temporary barrier to boats and related recreation. Post-construction, temporary barges would be removed and the ability to navigate rivers and channels would return to previous conditions.

Sacramento River

The Sacramento River barge unloading facility would be about 1 mile downstream from Georgiana Slough and Walnut Grove and would occupy about 800 feet of the east riverbank. The river channel is relatively narrow at this location (about 300 feet wide, as compared to 500–700 feet wide at the intake locations). Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Peak boat traffic volume may be high at

this location. Because boat traffic would be confined to a limited portion of the channel, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

North Fork Mokelumne River

The North Fork Mokelumne River barge unloading facility would be about 3 miles upstream (northeast) of the junction with the South Fork Mokelumne River and would occupy about 2,000 feet of the west riverbank. The river channel is about 300 feet wide at this location. Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Although this waterway connects the Walnut Grove area with the lower Mokelumne River and San Joaquin River, there are no boating facilities or recreation sites on the river itself, and the nearest marinas are about 3 miles away. Therefore, although boat traffic would be confined to a limited portion of the channel, increases in boat traffic congestion would likely be minor. The North Fork Mokelumne River in the vicinity of the barge unloading facility is a known location for waterskiing and wakeboarding.

San Joaquin River

The San Joaquin River barge unloading facility would be on the south side of Venice Island, on a wide bend in the river east of the Deep Water Ship Channel, and would occupy about 2,000 feet of the north riverbank. The river channel is more than 1,100 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain, and there would be little effect on boat passage. Boats using the ship channel could avoid the barge unloading facility entirely.

Middle River

The Middle River barge unloading facility would be on the east side of Bacon Island and would occupy about 1,000 feet of the west riverbank, about 2 miles south of Connection Slough. The river channel is about 400 feet wide at this location. Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Peak boat traffic volume may be high at this location. Because boat traffic would be confined to a limited portion of the channel, increased boat traffic congestion could occur during peak use times (primarily summer weekends). However, boaters would also have the option of bypassing the barge facility by making a slight detour to the east, around the opposite (east) side of Mildred Island, using Empire Cut and Lotham Slough to travel north or south through this area of the Delta. This available detour, coupled with signage and information outreach to be implemented as part of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific transportation management plans, including waterway navigation elements and providing notification of construction in waterways would likely minimize congestion and delay at this barge facility site.

Woodward Canal

The two Woodward Canal barge unloading facilities would be on the north and south sides of the canal, on Woodward Island and Victoria Island, respectively, and would occupy about 1,000 feet of the canal banks, about 0.5–0.75 mile east of Old River. The canal is about 350 feet wide at this location. Accounting for the potential for both barge facilities to be built and in operation at the same time, the barge facilities and barge operations at this location would occupy the entire or nearly the entire canal, constricting or preventing boat passage. Peak boat traffic volume is likely

high at this location; therefore, if boat passage continued, increased boat traffic congestion could occur during peak use (primarily summer weekends) because boat traffic would be confined to a limited portion of the channel. The Woodward Canal in the vicinity of the barge unloading facilities is a known location for waterskiing and wakeboarding.

Construction of temporary barge unloading facilities would result in adverse effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. These effects would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific transportation management plans, including waterway navigation elements and providing notification of construction activities in waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing recreation opportunities within the same general area within the Delta as where the loss has occurred. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would be long-term, lasting approximately 5 years and would be

considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations and in-water construction activities in the waterways. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This would be a less-than-significant impact on recreational navigation on Old River.

While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Sport fishing in the study area is a year-round activity, and includes bank fishing and boat fishing for a number of fish including striped bass, largemouth bass; green and white sturgeon; Chinook salmon, and American shad. Striped bass, American shad, and largemouth bass are all sport fish species that were introduced into rivers for that purpose. Striped bass and largemouth bass are regulated by CDFW for recreational fishing. Fishing likely occurs in all of the waterways where water intake and barge unloading facilities would be located.

Under Alternative 1A, construction of the water intakes and placement and use of barge facilities during tunnel/pipeline construction would result in temporary water quality effects (e.g., turbidity, accidental spills, disturbance of contaminated sediments); elevated underwater noise conditions (associated with pile driving and other construction activities); fish exposure to stranding and direct physical injury; and temporary exclusion or degradation of spawning and rearing habitats. These temporary construction-related effects would last for up to 5 years in the vicinity of intake and barge unloading facilities and could alter fish populations such that recreational fishing opportunities in the study area would be affected. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Construction of the approach canal and Byron Tract Forebay would not affect fish-accessible waterways and therefore would not affect sport fish. As a result, these construction activities would not result in a long-term reduction of recreational fishing opportunities at Clifton Court Forebay. There would be no adverse effects.

Overall, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.2, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Additionally, the environmental commitments to implement a fish rescue plan and the barge operations plan (Appendix 3B) would substantially minimize adverse effects from cofferdam and other in-water construction-related disturbances. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of recreational fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects, including environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*); and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 1A may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.2, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 1A would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Generally, the peak recreation season at the reservoirs falls between May to September. Reservoirs are usually at maximum storage volume and surface water elevation in May and decline over the course of the summer through September. This analysis compares the results of the CALSIM II end-of-September reservoir water surface elevations because typically there are more instances in which reservoir elevations fall below key surface water elevation thresholds (hereafter referred to as "recreation thresholds") (i.e., number of years out of the 82 simulated when the September end-of-month storage is less than the recreation elevation threshold). Under these conditions, the overall usable reservoir area is reduced and previously submerged islands or shoals may become exposed and affect boating safety. In addition, shoreline recreation becomes degraded.

For each reservoir, a specific water surface level elevation was selected as the "recreation threshold," an initial indicator to represent constrained boating conditions for the comparison of the BDCP action alternative conditions to Existing Conditions (CEQA baseline), ELT, and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). Additional consideration of other factors is discussed, for instance where the modeling results show substantial changes to reservoir levels that may affect recreation at a particular location (generally, this occurs for San Luis Reservoir). Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 1A (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 1A there would be from 1 to 20 additional years when end-of-September elevations result in the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 1A cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 1A (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 1A.

Table 15-12a. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of September Elevations below Recreation Thresholds) for BDCP Alternatives

	Recreation Threshold[a]								
	Trinity Lake <2,270 ft elevation			Shasta Lake <967 ft elevation			Lake Oroville <700 ft elevation		
BDCP Alternative	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)
Existing Condition (CEQA)	21			17			17		
No Action (2060)	43	22		29	12		32	15	
Alternative 1A–C (2060)	41	20	-2	27	10	-2	18	1	-14
Alternative 2 A–C (2060)	43	22	0	29	12	0	29	12	-3
Alternative 3 (2060)	41	20	-2	27	10	-2	18	1	-14
Alternative 4 (2060)									
Scenario H1	40	19	-3	22	5	-7	23	6	-9
Scenario H2	38	17	-5	25	8	-4	24	7	-8
Scenario H3	41	20	-2	28	11	-1	29	12	-3
Scenario H4	40	19	-3	29	12	0	35	18	3
Alternative 5 (2060)	43	22	0	29	12	0	26	9	-6
Alternative 6 A–C (2060)	33	12	-10	24	7	-5	22	5	-10
Alternative 7 (2060)	39	18	-4	27	10	-2	18	1	-14
Alternative 8 (2060)	34	13	-9	25	8	-4	32	15	0
Alternative 9 (2060)	39	18	-4	28	11	-1	35	18	3

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected BDCP alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action 2060). A positive change would indicate more years with reduced recreation opportunities.

Table 15-12b. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of September Elevations below Recreation Thresholds) for BDCP Alternatives

	Recreation Threshold[a]								
	Folsom Lake <405 ft elevation			New Melones Lake <900 ft elevation			San Luis Reservoir <360 ft elevation		
BDCP Alternative	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action 2060 (NEPA)
Existing Condition (CEQA)	22			9			3		
No Action (2060)	50	28		13	4		9	6	
Alternative 1A–C (2060)	38	16	-12	12	3	-1	15	12	6
Alternative 2 A–C (2060)	44	22	-6	13	4	0	34	31	25
Alternative 3 (2060)	41	19	-9	12	3	-1	17	14	8
Alternative 4 (2060)									
Scenario H1	41	19	-9	13	4	0	20	17	11
Scenario H2	37	15	-13	12	3	-1	47	44	38
Scenario H3	44	22	-6	13	4	0	37	34	28
Scenario H4	47	25	-3	12	3	-1	55	52	46
Alternative 5 (2060)	48	26	-2	12	3	-1	31	28	22
Alternative 6 A–C (2060)	43	21	-7	12	3	-1	67	64	58
Alternative 7 (2060)	51	29	1	13	4	0	48	45	39
Alternative 8 (2060)	49	27	-1	13	4	0	76	73	67
Alternative 9 (2060)	45	23	-5	12	3	-1	29	26	20

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected BDCP alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action 2060). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

No Action Alternative (2060) Compared to Alternative 1A (2060)

The comparison of Alternative 1A (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Table 15-12a and Table 15-12b, operation of Alternative 1A would result in changes in the frequency with which the end-of-September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as water-dependent recreation thresholds. In all but one instance (San Luis Reservoir), the CALSIM II modeling results indicate that reservoir levels under Alternative 1A operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake, and would be considered beneficial effects of Alternative 1A operations. Operation of Alternative 1A would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 1A because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 6 additional years which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. This is a less than 10% change and would not result in a substantial reduction in recreation opportunities or experiences. In addition, at the Basalt boat launch, which is accessible to elevation 340 feet, operations under Alternative 1A would result in only one additional year for which reservoir elevations would fall below the recreation threshold relative to the No Action Alternative (2060) condition. This is also a less than 10% change and would not be considered a substantial reduction in recreation opportunities. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 1A (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. Operation of Alternative 1A would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the modeling indicates that reservoir levels could exceed the recreation threshold up to 6 additional years under Alternative 1A operations relative to the No Action Alternative (2060) condition. This is a less than 10% change and is not considered a substantial reduction in recreation opportunities or experiences at this reservoir. Overall, this impact would be less than significant, and these conditions represent improved recreation conditions under operation of Alternative 1A because there would be fewer years in which end-of-September reservoir levels would fall below the

recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Intake maintenance, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment could have a minor effect on boat passage and navigation in the Sacramento River. Repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reduce opportunities for waterskiing, wakeboarding, or tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment and these effects would be expected to be short-term (2 years or less). In addition, the areas around the proposed intake locations are not usually used for waterskiing, wakeboarding, or tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in periodic temporary but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

Conveyance facility maintenance may include painting, landscaping, equipment replacement, and mechanical repairs that would be short-term and intermittent and would not affect recreation opportunities. Maintenance activities for these facilities would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation measures as part of Alternative 1A could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation measures would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation measures would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement conservation measures would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. CM2 would reduce migratory delays and loss of adult salmon, steelhead, and sturgeon at Fremont Weir and other structures; enhance rearing habitat for Sacramento River Basin salmonids; enhance spawning and rearing habitat for Sacramento splittail; and improve food sources for delta smelt downstream of the bypass. To achieve this, CM2 includes modifications to the Yolo Bypass that, in balance with existing uses, would benefit covered fish by increasing the frequency, duration, and magnitude of floodplain inundation and improving fish passage.

Yolo Bypass fishery enhancement would be achieved with site-specific projects to construct fish passage improvements and facilities to introduce and manage additional flows for seasonal floodplain habitat. Prior to construction for each project, the preparatory actions would include interagency coordination, feasibility evaluations, site or easement acquisition, modifications to agricultural practices, development of site-specific plans, and environmental compliance.

The YBFEP would propose a balance between uses of the Yolo Bypass such as flood protection, agriculture, endangered terrestrial species habitat, fisheries habitat, the Yolo Natural Heritage Program, and managed wetlands habitat as described in existing state and federal land management plans associated with the Yolo Bypass Wildlife Area and existing conservation easements on private land.

Noise and the physical footprint associated with CM2 physical modifications would temporarily affect the quality and access of fishing opportunities in the affected areas. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This modification in operations would have an adverse affect on onshore fishing opportunities resulting from reduced access to the popular deeper channels due to an increased floodplain footprint in the Yolo Bypass Wildlife Area. Two inundation targets have been proposed, which would attempt to inundate 7,000-10,000 acres from November to May, or 17,000 acres from December through February, every year for 50 years. This conservation measure was designed, in part, to improve habitat for covered fish species, including

Chinook salmon, green and white sturgeon, and steelhead. These habitat improvement elements would lead to increased populations of targeted fish species, which over time, could have a beneficial effect on recreational fishing opportunities. Non-native fish populations may be reduced. Thus, to the extent that access is available to anglers, the fishing experience for native sport species benefiting from this measure would improve based on hypothetical higher catch rates. Environmental commitments would be available to reduce the effects of inundation on fishing opportunities.

CM4 would provide for the restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Tidal habitat restoration activities would lead to temporary decreases in boat and onshore fishing opportunities and quality due to the physical footprint, noise, odors, and other conditions created by site preparation and earthwork activities, including channel and bank modification in restoration areas. Tidal habitat restoration could permanently disrupt existing points of fishing access, eliminating recreational opportunities. Depending on the extent of recreational access granted to the public in new tidal habitat areas, however, this measure could also support expanded opportunity for shore-based and boat fishing. This conservation measure was designed, in part, to improve habitat for covered fish species, including Chinook salmon, green and white sturgeon, river and Pacific lamprey, and steelhead. CM4 would improve fish habitat which would be expected to lead to increased populations of targeted fish species, which over time, would benefit fishing experience associated with these and other target species that benefit from restored tidal habitat.

Another guiding principle in the design of CM4 is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. Predator removal measures would be highly localized and would not appreciably decrease Delta-wide abundance of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.2). The recreational experience associated with fishing for these species would not be expected to be substantially reduced. On balance, it is anticipated that CM4 would have a minor positive effect on the fishing experience in the Delta region.

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle Rivers channels. While temporary earthwork and site preparation measures could temporarily limit recreational access and interfere with the quality of fishing in restoration areas, this measure would result in an increase in boat fishing opportunities as a result of improvements in riparian habitat for a number of fish species and increased areas for boat navigation. Similar improvements may also exist for onshore fishing, though current points of access may be eliminated following implementation of restoration activities.

Within the first 40 years of Plan implementation, a total of 10,000 acres of seasonally inundated floodplain would be restored under Alternative 1A. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. These restoration measures would result in a further increase in onshore and boat fishing opportunities due to improvements in riparian habitat for fish; however, existing points of access may be modified or disrupted.

CM6 would create benches on the outboard side of levees or create setback levees. Site preparation and earthwork associated with the construction of these areas and potential access restrictions would lead to temporary or permanent decreases in boat and onshore fishing quality and opportunities. However, CM6 was designed, in part, to improve habitat for covered fish species, including Chinook salmon, sturgeon, and steelhead. CM6 would improve the fishing experience associated with these and other target species that benefit from enhanced channel margin habitat. Another guiding principle in the design of this measure is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. The recreational experience associated with fishing for these species would be reduced by this measure. After 20 years of implementation, the BDCP would cumulatively enhance 10 miles of channel margin habitat. After 30 years, this measure would cumulatively enhance 20 miles of channel margin. This measure would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. On balance, it is anticipated that because of these habitat improvements and expected increase in targeted fish populations, this measure would make a minor improvement to the fishing experience in the Delta region.

CM7 would restore 1,100 acres of riparian habitat in the first 15 years and up to 5,000 acres in the late long-term. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with CM4, CM5, and CM6. Restoration of riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic (SRA) cover. By year 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. While construction activities associated with this component may temporarily or permanently restrict some access for anglers and create temporary conditions less favorable for fishing activities, this measure would improve fish habitat, which would be expected to result in higher populations of targeted species and lead to an enhanced fishing experience.

CM11 would provide beneficial effects on fishing opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2 *Recreation*). The reserve system would update one boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities.

CM12 would minimize adverse effects of methylmercury on covered fish species, including white sturgeon and North American green sturgeon, and Sacramento splittail. This measure, if successful in reducing predation caused as a byproduct of methylmercury and improving fish health, would support an enhanced fishing experience for onshore and boat-based anglers.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. Site-specific conditions and the intended goal would dictate the specific method of removal. This measure is hypothesized to reduce predation mortality on covered species (juvenile salmon,

steelhead, and splittail) by reducing habitat for nonnative predatory fish and by increasing turbidity levels. Increased turbidity could also support delta and longfin smelt foraging. Control of nonnative aquatic vegetation could also support access to additional rearing habitat for covered species, as well as increased food availability stemming from greater light levels for phytoplankton growth. Operations associated with vegetation control, particularly mechanical removal, would intermittently and temporarily affect the quality of fishing. However, this measure would increase opportunities for onshore and boat fishing for species that are hampered by the presence of excessive nonnative vegetation. While these activities would reduce the fishing experience related to nonnative predatory fish, overall these efforts would not appreciably reduce Delta-wide abundances of predatory game fish (i.e., largemouth bass, striped bass) and populations would not be diminished to the extent that fishing opportunities would be adversely affected (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.2).

CM14 would maintain dissolved oxygen (DO) levels above levels that impair covered fish species in the Stockton Deep Water Ship Channel when covered species are present. The BDCP would operate and maintain an oxygen aeration facility in the Stockton Deep Water Ship Channel to increase DO concentrations. By improving conditions for covered and game fish species, this measure would increase opportunities for onshore and boat fishing activities.

CM15 would reduce local effects of predators on covered fished species by conducting predator control in areas with high predator density. Predator *hot spots* would be identified and control methods would be adopted including the removal of predator hiding spots, modification of channel geometry, targeted removal of predators, and other focused methods as dictated by site-specific conditions and the intended outcome or goal. Preference for which hot spots to address would be given to areas of high overlap with covered fish species, such as migratory routes or spawning and rearing habitats. Predator control would decrease opportunities for onshore and boat fishing for species targeted for removal but would improve fishing opportunities for game species benefiting from reduced predation. If implementation includes a relaxation of regulations relating to bag limits or size restrictions associated with predatory species, this measure would carry a beneficial effect for anglers targeting these species as well. Overall, as for other CMs targeting predator species, these efforts would not appreciably reduce Delta-wide abundances of predatory game fish such that recreational fishing would be adversely affected (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.2).

CM16 involves nonphysical fish barriers at the junction of channels with low survival of outmigrating juvenile salmonids to deter fish from entering these channels. Nonphysical fish barrier placement locations would include the Head of Old River, the Delta Cross Channel, and Georgiana Slough, and could possibly include Turner Cut, Columbia Cut, the Delta-Mendota Canal intake, and Clifton Court Forebay. Installation of these barriers could temporarily limit fishing activities by creating noise and necessitating a physical footprint in existing fishing areas. This measure would decrease opportunities for onshore and boat fishing in some channels but would support overall native fish populations, resulting in a mixed, but minimal, effect on fishing opportunities across the Delta region.

To address the illegal harvest of covered species across the study area, under CM17, the BDCP Implementation Office would contribute funds directly to the CDFW Delta-Bay Enhanced Enforcement Program to hire and equip additional staff to improve enforcement against poaching of covered species. The program currently has a 10-warden squad; the BDCP would provide funds to hire and equip 23 additional staff, including 17 game wardens and 6 supervisory and administrative

staff, to increase enforcement of fishing regulations. While this measure would curb illegal fishing activities and could result in greater regulatory burdens for law-abiding anglers as a result of increased inspection frequency, it would increase opportunities for a wider number of individuals through the enforcement of bag limits.

CM18 would establish new conservation propagation programs and expand the existing program for delta and longfin smelt. This measure would include development of a delta and longfin smelt conservation hatchery by USFWS. The specifications and operations of this facility have not been developed. The final selection of a location for the facility will involve additional environmental review. The location is expected to be within the study area in the vicinity of Rio Vista. The BDCP identifies potential USFWS conservation hatchery facility locations in this area (see Figure 3.4-20 in the BDCP, Chapter 3, *Conservation Strategy*). One site is northwest of the city limits and could be used for a supplementation production facility. This site is not near any existing well-established recreation sites or opportunities and is approximately 1 mile from the Sacramento River such that future construction and operation activities would not be expected to affect water-based recreation opportunities and experiences. The other site is a former Army Reserve base on the west river bank, south of the city limits, that would be developed as a genetic refuge and research facility. Construction at this site could affect recreation activities and experiences at the Delta Marina Yacht Harbor, immediately north of the site, and boating (including boat fishing) on the Sacramento River, depending on noise levels and the degree of visual disturbances. Additional permitting and environmental documentation would be needed to implement this conservation measure once facility designs and funding are available. Overall, implementation of CM18 would not be expected to have an adverse effect on fishing opportunities because construction of the facility would be anticipated to last 2 years or less (short term) and operation of the facility would not be expected to affect recreational fishing.

Under CM19, the BDCP Implementation Office would provide a mechanism for implementing stormwater treatment measures that would result in decreased discharge of contaminants to the Delta. These measures would be focused on urban areas and would fund local government projects to reduce pollutant discharges in stormwater. This conservation measure is intended to reduce the amount of pollution in stormwater runoff entering Delta waterways. These efforts would benefit aquatic species, including sport fish populations, in the study area. There would be no adverse effect on recreational fishing.

Under CM20, the BDCP Implementation Office would fund a Delta Recreational Users Invasive Species Program designed to implement actions to prevent the introduction of new aquatic invasive species and reduce the spread of existing aquatic invasive species via recreational watercraft, trailers, and other mobile recreational equipment used in aquatic environments in the study area. The program would consist of two primary elements targeting recreational boaters: education and outreach, and watercraft inspection. Education and outreach printed materials and interpretive displays would provide information regarding the presence and range of existing aquatic invasive species, the various vectors of aquatic invasive species, the threat of existing aquatic invasive species spreading within the study area, and the risk of new aquatic invasive species introductions. The watercraft inspection would involve development and implementation of a comprehensive inspection program. This type of program involves screening interviews at the point of entry; a comprehensive inspection of all high risk watercraft, trailers, and equipment identified as high-risk during the screening interview; decontamination and/or quarantine or exclusion of watercraft, trailers, and equipment that are not clean, drained, and dry; and optional vessel certification. These efforts would benefit aquatic species, including sport fish populations, in the study area. Although

there could be a marginal effect on the recreation experience if boaters are delayed at the boat launch, it is expected that there would be no adverse effect on recreational fishing.

Under CM21, the BDCP proponents would provide funding for actions that would minimize the potential for entrainment of covered fish associated with operation of nonproject diversions and also to improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources into nonproject diversions, thereby benefiting all covered fishes. The number and size of the diversions that would be eliminated are not precisely known because the affected parcels have not yet been identified and moreover, some existing diversions may be remediated before being incorporated into the BDCP preserve system. Unscreened diversions may be handled through removal of individual diversions that have relatively large effects on covered fish species; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions with substantial effects on covered species from high quality to lower quality habitat, in conjunction with screening; reconfiguration and screening of individual diversions in high quality habitat to take advantage of small-scale distribution patterns and behavior of covered fish species relative to the location of individual diversions in the channel; voluntary alteration of the daily and seasonal timing of diversion operation; or other methods may be implemented if the technical team determines it to be appropriate. Implementation of this measure would likely involve some in-water construction at some sites. These activities would be highly localized and of short duration and would not be expected to result in adverse effects on recreational fishing in the study area. Mitigation measures and environmental commitments would be available to reduce the effects of construction on recreation opportunities and experiences in the study area.

During the implementation stage, construction activity associated with conservation measures could result in adverse effects on recreation by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. However, the conservation measures are expected to result in a long-term beneficial effect on recreation by enhancing aquatic habitat and fish abundance in the study area.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species, and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.2). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans,

hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation measures. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.2). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.2). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.2).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** This assessment evaluates BDCP conservation measures related to habitat restoration and enhancement efforts and those designed to reduce other stressors, describing their potential effects on boating recreation in the study area. Because the details surrounding the location and implementation of many of these measures are under development, these topics are addressed at a programmatic level. CM17, Illegal Harvest Reduction, is an enforcement funding measure; CM19, Urban Stormwater Treatment, would reduce pollutant discharges in stormwater—these measures would not affect recreational boating opportunities and are not discussed in this analysis.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. Boats are not allowed in the Yolo

Bypass Wildlife Area, so construction activities associated with the physical modifications for this measure would not affect boating opportunities. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This measure would not affect opportunities for boating-related activities as a result of longer inundation periods.

CM4 provides for the restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. In the early long-term, BDCP implementation would provide for the cumulative restoration of 25,975 acres of freshwater and brackish tidal habitat in the BDCP ROAs under all the action alternatives. In the late long-term, a cumulative 65,000 acres of freshwater and brackish tidal habitat throughout the ROAs would be restored. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. CM4 would lead to temporary decreases in boat-related recreation opportunities as a result of noise and other conditions associated with channel and bank modification activities in restoration areas. Following completion of restoration, CM4 would support expanded opportunities for boating in reconnected and dredged sloughs.

CM5 provides for restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle Rivers channels. These locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. While site preparation and earthwork activities associated with restoration may temporarily limit some boating access and lead to degraded conditions resulting from noise, odors, or visual effects, CM5 would result in an increase in boat-related recreation opportunities as a result of the seasonal expansion of navigable areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. At least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. CM6 would create benches on the outboard side of levees or create setback levees. Construction effects including noise, odors, and deteriorated visual conditions would temporarily alter the quality of the boating experience in enhancement areas. Where construction and completion of new benches would extend into existing waterways, navigable areas would be slightly reduced, which would permanently affect boating-related recreation. However, in cases where setback levees are constructed and channels are expanded, there would be a slight increase in boating opportunities.

CM11 would provide beneficial effects on boating opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2 *Recreation*). The reserve system would update one boating facility, as well as a

new boat launch facility within the footprint of the North Delta diversion facilities, which would increase opportunities for boating within the study area.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. While aquatic vegetation removal operations could temporarily restrict or obstruct navigation and reduce the quality of boating, overall the measure would increase boat passage and navigation and would improve the boating experience.

Under CM16, nonphysical fish barriers, such as sound, air or light barriers, would be placed at the head of Old River, the Delta Cross Channel, and Georgiana Slough and could possibly include Turner Cut, Columbia Cut, the Delta-Mendota Canal intake, and Clifton Court Forebay. Depending on their design, the construction and operation of these barriers could constrict boat passage or necessitate lower speed limits, diminishing the boating experience around the barriers.

Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

CM18 would establish new conservation propagation programs and expand the existing program for delta and longfin smelt. This measure would include development of a delta and longfin smelt conservation hatchery by USFWS. The specifications and operations of this facility have not been developed. The final selection of a location for the facility will involve additional environmental review. The location is expected to be within the study area in the vicinity of Rio Vista. The BDCP identifies potential USFWS conservation hatchery facility locations in this area (see Figure 3.4-20 in BDCP Chapter 3, *Conservation Strategy*). One site is northwest of the city limits and could be used for a supplementation production facility. This site is not near any existing well-established recreation sites or opportunities and is approximately 1 mile from the Sacramento River such that future construction and operation activities would not be expected to affect water-based recreation opportunities and experiences. The other site is a former Army Reserve base on the west river bank, south of the city limits, that would be developed as a genetic refuge and research facility. Construction at this site could affect recreation activities and experiences at the Delta Marina Yacht Harbor, immediately north of the site, and boating on the Sacramento River, depending on noise levels and the degree of visual disturbances. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, Aesthetics and Visual Resources, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.9). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.2). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts

related to a long-term reduction in boating-related recreation activities to a less-than–significant level. Overall, implementation of CM18 would not be expected to have an adverse effect on recreational boating opportunities.

Under CM20, the BDCP Implementation Office would fund a Delta Recreational Users Invasive Species Program designed to implement actions to prevent the introduction of new aquatic invasive species and reduce the spread of existing aquatic invasive species via recreational watercraft, trailers, and other mobile recreational equipment used in aquatic environments in the study area. The program would consist of two primary elements targeting recreational boaters: education and outreach, and watercraft inspection. Education and outreach printed materials and interpretive displays would provide information regarding the presence and range of existing aquatic invasive species, the various vectors of aquatic invasive species, the threat of existing aquatic invasive species spreading within the study area, and the risk of new aquatic invasive species introductions. The watercraft inspection would involve development and implementation of a comprehensive inspection program. This type of program involves screening interviews at the point of entry; a comprehensive inspection of all high risk watercraft, trailers, and equipment identified as high-risk during the screening interview; decontamination and/or quarantine or exclusion of watercraft, trailers, and equipment that are not clean, drained, and dry; and optional vessel certification. Although there could be a marginal effect on the recreation experience if boaters are delayed at the boat launch, it is expected that there would be no adverse effect on recreational boating.

Under CM21, the BDCP proponents would provide funding for actions that would minimize the potential for entrainment of covered fish associated with operation of nonproject diversions and also to improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources into nonproject diversions, thereby benefiting all covered fishes. The number and size of the diversions that would be eliminated are not precisely known because the affected parcels have not yet been identified and moreover, some existing diversions may be remediated before being incorporated into the BDCP preserve system. Unscreened diversions may be handled through removal of individual diversions that have relatively large effects on covered fish species; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions with substantial effects on covered species from high quality to lower quality habitat, in conjunction with screening; reconfiguration and screening of individual diversions in high quality habitat to take advantage of small-scale distribution patterns and behavior of covered fish species relative to the location of individual diversions in the channel; voluntary alteration of the daily and seasonal timing of diversion operation; or other methods may be implemented if the technical team determines it to be appropriate. Implementation of this measure would likely involve some in-water construction at some sites. These activities would be highly localized and of short duration and would not result in adverse effects on recreational boating in the study area.

With the exception of CM 18, these measures would not result in a long-term reduction in boating-related recreation activities. With mitigation implemented, CM 18 would result not be adverse. Overall, this impact would not be adverse.

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Overall, these measures would not be anticipated to result in a long-term reduction in boating-related recreation activities; therefore, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.2). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.2). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to less-than-significant. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** This section considers upland recreational activities and potential effects from BDCP conservation measures geared toward the restoration and enhancement of habitat and the reduction of stressors on covered species. The activities under consideration include hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. The specific location and implementation activities associated with these measures are pending; thus, these topics are addressed at a programmatic level. Future guidelines governing the level of recreational access allowed in restored habitat areas would influence the severity of the BDCP's effects on these activities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19, or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. The Yolo Bypass Wildlife Area provides opportunities for upland recreational activities, including waterfowl and upland game bird hunting, hiking and walking, wildlife viewing, botanical viewing, and nature photography. Changes to flood management in the Yolo Bypass have the potential to result in effects on waterfowl and other recreation uses, including recreational hunting, in this area (Ducks Unlimited 2012). Because the wildlife area closes during periods of inundation, this measure would decrease opportunities for these activities as a result of the longer inundation periods in the Yolo Bypass. Under Existing Conditions, flood-related conditions contribute to Yolo Bypass hunting area closures lasting for up to 2 weeks (14 days) out of the 100-day hunting season. Removal of berms and levees could also decrease recreational access in the Yolo Bypass. Construction activities would also temporarily affect the quality of activities by introducing noise, odors, and unattractive visual scenes into the recreational environment. Longer inundation events would reduce wetland-dependent wildlife species access to food and could result in impacts to upland game birds and failure of nesting birds during spring events. This may decrease hunting and wildlife viewing experiences. Winter flood water levels under CM2 could be deeper than Existing Conditions, waterfowl species (e.g., dabbling duck) that prefer a shallower flooded

seasonal wetland area could experience reduced foraging habitat. Another factor that could affect waterfowl populations and related waterfowl hunting and bird watching would be spring seed production loss and related decrease of food resources for these populations (Ducks Unlimited 2012). Hunting in the Yolo Bypass is most common in the lower elevation portions of the property; thus, low levels of flooding would impact blind areas and free roam areas and reduce hunting opportunities. Two inundation targets have been proposed for CM2, which would attempt to inundate 7,000-10,000 acres from November to May, or 17,000 acres from December through February, every year for 50 years, which could have potential effects on waterfowl and associated recreational opportunities. The hunting season for waterfowl lasts from late October through January, so some months would not be affected by inundation. However, CM2 would still have an adverse effect on upland recreational opportunities. BDCP proponents and agencies will work with CDFW to provide alternate public hunting opportunities and access and address additional management costs resulting from increased inundation of the Yolo Wildlife Area resulting from CM2. Additionally, environmental commitments are available to reduce the effects of inundation on upland recreational opportunities.

CM3 provides the mechanism and guidance for land acquisition and establishment of a system of conservation lands in the study area necessary to meet BDCP natural community and species habitat protection objectives. This system of conservation lands would be built over the implementation term of the BDCP to protect and enhance areas of existing natural communities and covered species habitat, protect and maintain selected plant species with very limited distributions, provide sites suitable for restoration of natural communities and covered species habitat, and provide habitat connectivity among the various BDCP conservation land units in the system. This measure includes 8,000 acres of grassland habitat, 600 additional acres vernal pool complex, 150 acres of alkali seasonal wetland complex and 46,905 acres of agricultural habitats (cultivated lands) all protected under CM3; tidal habitat restored under CM4; valley/foothill riparian habitat restored under CM7; vernal pool complex restored to achieve no net loss under CM9; and nontidal freshwater perennial emergent wetland and nontidal perennial aquatic habitat restored under CM10. Depending on the acquisition strategy implemented through this measure, recreational access for upland activities could be expanded or diminished. Mechanisms that permit public access would increase opportunities related to upland hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. Alternatively, acquisition that would exclude public recreational use would decrease opportunities for these activities.

CM4 provides for restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. In the late long-term, BDCP implementation would provide for the cumulative restoration of 65,000 acres of freshwater and brackish tidal habitat in the BDCP ROAs under Alternative 1A. The extent of restored tidal habitat includes shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Site preparation and earthwork associated with this restoration could result in temporary closure to recreational areas and excess noise, decreasing recreational quality. Additionally, some upland areas would be converted to tidal habitat as part of this measure, limiting access for upland recreation activities including upland hiking and walking, camping, picnicking, and nature viewing and photography. However, because transitional upland

habitat adjoining tidal areas would also be restored, this could also create new opportunities. Furthermore, restoration actions adjacent to existing recreational areas could enhance the quality of the experience in these areas.

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle River channels; these locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. Levee removal and construction would temporarily limit access, while increased inundation of formerly upland areas would temporarily and permanently limit access, diminishing opportunities for a range of upland recreational activities including upland hiking, walking, camping, picnicking, upland game hunting, sightseeing, wildlife and botanical viewing, and nature photography. Noise, odors, and visual degradation from construction would also temporarily affect upland recreational quality. However, restoration under this measure would provide additional on-water waterfowl hunting opportunities and improve the quality of recreational experiences in existing and adjacent recreation areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. Under CM6 at least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. At least 5 of the 20 miles of channel margin enhancement would take place along the Sacramento River and at least 5 miles would be along the San Joaquin River. The remaining 10 miles would be distributed among other fish migration channels. Earthwork and site preparation associated with habitat enhancement may limit access to existing upland recreational areas and degrade the recreational experience. This measure would create benches on the outboard side of levees or create setback levees. Where setback levees and associated enhancement activities close access to existing upland areas, associated recreational opportunities such as wildlife viewing and hiking would be reduced. Where habitat enhancement creates new upland areas accessible to recreationists, the opportunities for upland activities would improve. In either case, habitat enhancements would improve the experience of wildlife-dependent upland recreational activities from existing, adjacent recreation areas.

CM7 would restore 1,100 acres of riparian habitat in the first 15 years and up to 5,000 acres in the late long-term. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with CM4, CM5, and CM6. By year 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. Restoration of riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic cover. While construction activities and access restrictions associated with this component may temporarily or permanently reduce opportunities for or quality of upland recreational activities, this measure would restore riparian habitat, which would support increased opportunities and improved quality of upland game hunting, wildlife viewing, botanical viewing, nature photography, hiking, walking, picnicking, and sightseeing.

Under CM8, 2,000 acres of grassland within CZ 1, CZ 8, and CZ 11 would be restored. Restoration activities for this measure would be associated with tidal habitat restoration under CM4 and agricultural land protection under CM3. Anticipated actions to restore grassland habitat, as appropriate to site-specific conditions, would include, but not be limited to, acquiring lands, in fee

title or through conservation easements, with site characteristics that support restoration of high–value grassland, restoring grassland by sowing native species using a variety of techniques, and potentially restoring grazing grassland habitat to modify its vegetation. While earthwork and site preparation of these areas could temporarily degrade recreational access and quality by introducing noise and odors into the setting, restoration of grassland communities would increase opportunities for upland hunting, wildlife viewing, botanical viewing, and nature photography due to improvements to wildlife and native plant habitats. Restoration of natural areas under this measure would also increase opportunities for upland hiking, walking, picnicking, and sightseeing.

Under CM9, vernal pool complex in CZ 1, CZ 8, and CZ 11 would be restored to achieve no net loss of this habitat type associated with BDCP covered activities. Anticipated actions to restore vernal pool complex habitat include acquiring lands, in fee-title or through conservation easement, suitable for restoration of vernal pool complex habitat; restoring remnant natural vernal pool and swale topography; restoring and maintaining natural hydrology; restoring and maintaining natural salt and suspended clay concentrations in vernal pool water; significantly reducing or preventing the deposition of substances that increase the fertility of the habitat; controlling the cover of invasive nonnative plant species; adjusting livestock grazing regimes in vernal pool complexes; preventing the introduction of invasive species; and hand collecting seed and vernal pool invertebrates from the vicinity of the vernal pools to be restored as a source for establishment of native species. Activities associated with the implementation of this measure could temporarily limit access to existing recreational opportunities and create noise, detracting from the experience; however, restoration of vernal pool complexes is anticipated to modestly increase opportunities for upland recreation including wildlife viewing, botanical viewing, and nature photography.

Under CM10, 1,200 acres of nontidal freshwater marsh within CZ 2 and CZ 4 and/or CZ 5 would be restored by year 40. CM10 actions would be phased with 400 acres restored by year 10, 600 by year 20 and the cumulative total of 1,200 acres restored by year 40. Restoration of nontidal freshwater emergent wetland and nontidal perennial aquatic natural communities would provide habitat for giant garter snake, western pond turtle, and other native wildlife and plant species characteristic of this habitat. Restored nontidal wetlands would also be designed and managed to support other native wildlife functions including waterfowl foraging, resting, and brood habitat and shorebird foraging and roosting habitat. Restored habitat would include preserved transitional upland habitat to provide upland habitat for giant garter snakes and western pond turtles and nesting habitat for waterfowl. While construction activities and access restrictions associated with this measure may reduce some upland recreational opportunities and create temporary construction effects from activities producing noise or odors, improvements in wildlife and native plant habitats associated with the measure would increase the quality of upland hunting, wildlife viewing, botanical viewing, and nature photography in and adjacent to restored areas.

Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. This measure is expected to increase upland recreational opportunities by permitting hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, and equestrian use, as well as a potential for limited hunting opportunities.

Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities available to hiking, nature photography, or other similar activity. However, implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality of recreational opportunities.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, and hunting opportunities at the Yolo Wildlife Area and other locations, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could result in the potential for incompatibilities with plans and policies related to protecting recreation resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues as overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 1A is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 1A on recreation resources is addressed in Impacts REC-1 through REC-11, and in other chapters such as Chapter 23, *Noise*, Section 23.3.3.2, and Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2. The following is a summary of compatibility evaluations related to recreation resources for plans and policies relevant to the BDCP.

- *The New Melones Lake Area Final Resource Management Plan, Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area, General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, Folsom Lake State Recreation Area General Plan, Lake Oroville State Recreation Area Resource Management Plan and General Development Plan,* and *San Luis Reservoir State Recreation Area General Development Plan* all have policies or goals to protect the recreation resources and promote a range of opportunities to visitors to these areas. Construction and operation of the proposed water conveyance facilities and other conservation measures would not affect recreation opportunities in these areas and would be compatible with these plans.

- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Delta Protection Act), *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan,* and *Brannan Island and Franks Tract State Recreation Areas General Plan* are all focused on the protection of resources, including recreation resources, within the Delta. These plans have policies, objectives, or goals intended to protect and enhance existing recreation and encourage development of new local and regional opportunities. Constructing the proposed conveyance facilities would result in long term disruption to existing established recreation areas in the study area and change the nature of the recreation setting. The proposed water conveyance elements could be considered incompatible with measures to protect existing recreation opportunities in the study area.

- The Delta Protection Act, the Delta Protection Commission's Great California Delta Trail System, and the Great California Delta Trail *Blueprint Report for Contra Costa and Solano Counties* all promote development of a regional trail system providing a continuous regional recreational corridor to provide bikeways and hiking trails. The BDCP proponents would work with these regional and local efforts to design proposed restoration areas to be compatible with and complement the goals of creating a regional trail network and where feasible to adapt restoration proposals to incorporate recreational amenities and opportunities in these areas.

- Regional plans and those geared toward the management of specific areas, including the *Stone Lakes National Wildlife Refuge CCP, Cosumnes River Preserve Management Plan, Brannan Island and Franks Tract State Recreation Areas General Plan, Yolo Bypass Wildlife Area Land Management Plan, the Yolo County General Plan, Lower Sherman Island Wildlife Area Land Management Plan, San Francisco Bay Plan, Suisun Marsh Protection Plan,* and *Solano County General Plan Suisun Marsh Policy Addendum* are primarily designed to preserve and enhance the natural resource and recreation qualities of these areas. Implementing the BDCP alternatives may create disruptions related to facility and restoration improvements. Proposed restoration areas in the Yolo Bypass, on Sherman Island, and in Suisun Marsh would be designed to be compatible with and complement the current management direction for these areas and would be required to adapt restoration proposals to meet current policy established for managing these areas.

- The BDCP would be constructed and operate in compliance with regulations related to boat navigation jurisdiction, rules, and regulations enforced by local, state (including the California Department of Parks and Recreation's Division of Boating and Waterways), and federal (including the U.S. Coast Guard) boating law enforcement. The alternative would be compatible with California State Land Commission regulations related to recreational piers or marinas.

- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2012b). Recreation at these parks would not be affected by this alternative.

- Alternative 1A would result in the construction of permanent and temporary features associated with the proposed water conveyance facility across land governed by the general plans of Sacramento, San Joaquin, Contra Costa, and Alameda Counties. The county general plans all have policies related to the protection of recreation resources and encourage the development of new water-based and land-based recreation opportunities. Sacramento and San Joaquin Counties recognize the Delta as an area of international importance and as a major recreational resource of these counties. Construction activities that disrupt and degrade recreation opportunities in the study area would be incompatible with policies designed to protect recreation resources,

including those intended to protect open space and natural areas and those that discourage development of public facilities and infrastructure unless it is related to agriculture, natural resources and open space, and has recreational value.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.3 Alternative 1B—Dual Conveyance with East Alignment and Intakes 1–5 (15,000 cfs; Operational Scenario A)

Table 15-13 lists the recreation sites and areas that may be affected by Alternative 1B (Mapbook Figure M15-2). Specific effects on recreation areas or sites are discussed below.

Table 15-13. Recreation Sites Potentially Affected by Construction of Alternative 1B

Recreation Site or Area	Primary Alternative Feature	Impact Source	Duration
Clarksburg Marina	Potential borrow and/or spoils area between Intakes 1 and 2	Noise and visual disturbances	Ongoing: up to 5–6 years (long term)
Clarksburg Boat Launch	Intake 3, access roads, and transmission lines	Noise and visual disturbances	Ongoing; up to 5 years (long term)
Stone Lakes NWR (public use areas and private lands)	Potential borrow area east of Intake 1; canal, siphon and related work area; potential borrow and/or spoil area east of canal; Dierssen Road bridge, right-of-way, and work area; and Twin Cities Road bridge, right-of-way, and work area; tunnel work areas; and transmission lines	Permanent: canal and related structures; Temporary: noise and visual disturbances	Ongoing; up to 7 years (long term)
Cosumnes River Preserve (private lands) (tunnel siphon under Lost Slough to Mokelumne River)	Canal, tunnel work areas; tunnel siphon (subsurface); transmission lines; tunnel work area; RTM area; concrete batch plant; and fuel station	Noise and visual disturbances	Ongoing: up to 5 years (long term)
White Slough Wildlife Area—Pond 6	Canal, West Woodbridge Road bridge, bridge work area, and bridge right-of-way; temporary transmission line; and potential spoil area	Noise and visual disturbance	Ongoing: from about 1 year (short term) up to 6 years (long term)
Woodbridge Ecological Preserve, North Unit	Siphon work area (at Hog Slough), canal, West Woodbridge Road bridge, bridge work area; and temporary transmission line	Noise and visual disturbance	Ongoing: from about 1 year (short term) up to 6 years (long term)
Woodbridge Ecological Preserve, South Unit	West Woodbridge Road bridge, bridge work area, bridge right of way; canal; potential borrow and/or spoil area; siphon work area (at Sycamore Slough)	Temporary: noise and visual disturbance	Ongoing: from about 1 year (short term) up to 6 years (long term)
The Reserve at Spanos Park Golf Course	Potential borrow and/or spoil area	Noise	Ongoing: up to 4 years (long term)

Recreation Site or Area	Primary Alternative Feature	Impact Source	Duration
Paradise Point Marina (Disappointment Slough)	Canal; siphon and siphon work areas	Noise and visual disturbances	Ongoing: about 5 years (long term)
Weber Point Yacht Club (check position)	Potential borrow and/or spoil area	Noise and visual disturbances	Ongoing: up to 3 years (long term)
Windmill Cove Resort & Marina)	Potential borrow and/or spoil area near San Joaquin tunnel siphon and work areas	Noise and visual disturbances	Ongoing: up to 4 years (long term)
Buckley Cove: Marina West Yacht Club, Buckley Cove Boat Launch, River Point Landing, Ladd's Marina, Stockton Sailing Club and Buckley Cove Park	Potential borrow and/or spoils area	Noise and visual disturbances	Ongoing: up to 4 years (long term)
Clifton Court Forebay	Byron Tract Forebay, control structures and associated work areas	Noise and visual disruptions	Forebay and control structures: Up to 4 years (long term)
Clifton Court Forebay	Byron Tract Forebay canal approach structures	Noise	Up to 1 year (short term)

Sources: GIS data layers available from DWR: CPAD, Green Info Network, 2011; USFWS Boundaries, USFWS 2012; Recreation Areas, AECOM/ICF 2012; Recreation Facilities, AECOM/ICF 2012.

Note: Construction duration information is approximate and subject to further revision.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 1B conveyance facilities include elements that would be permanently located in three existing recreation areas: Stone Lakes NWR, Cosumnes River Preserve, and White Slough Wildlife Area Pond 6 (Table 15-13 and Mapbook Figure M15-2).

In the Stone Lakes NWR, a portion of the canal, a siphon under Snodgrass Slough, two bridges and associated rights-of-way, potential borrow and/or spoil area, and related temporary work areas are proposed. The proposed facilities would be south of Lambert Road in a portion of the Stone Lakes NWR that consists primarily of private land within the approved refuge boundary that is part of the cooperative wildlife management area, but is considered nonrefuge land. Temporary work areas would be returned to preconstruction conditions. There are no public recreation facilities in this area of the Stone Lakes NWR (U.S. Fish and Wildlife Service 2007a).

In the Cosumnes River Preserve, a portion of the tunnel siphon would be located beneath an area within the preserve (Table 15-13 and Mapbook Figure M15-2). All work would be underground and would not permanently displace any recreation facilities or lands within the preserve. No recreational opportunities would be permanently displaced, disrupted, or relocated by placement of the tunnel at this location.

In the Pond 6 portion of White Slough Wildlife Area, a portion of the W. Woodbridge Road bridge right-of-way area would be along the southwestern corner of the property. The bridge right-of-way would not permanently displace any existing recreational facilities.

Alternative 1B would not result in the permanent location of water conveyance facilities that would cause adverse effects due to permanent displacement of an existing well-established public use or private commercial recreation facility available for public access. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.3, and Chapter 23, *Noise*, Section 23.3.3.3, for additional discussion of these topics.

***CEQA Conclusion*:** Alternative 1B conveyance facilities include elements that would be permanently located in three existing recreation areas: Stone Lakes NWR, Cosumnes River Preserve, and White Slough Wildlife Area Pond 6 (Table 15-13 and Mapbook Figure M15-2). However, placement of these structures would not result in permanent displacement of any well-established public use or private commercial facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** A total of 18 recreation sites are within the construction impact area under Alternative 1B (Table 15-13 and Mapbook Figure M15-2). Adverse effects on recreation may include restricted access to a recreation facility or use of an area; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction that could adversely affect the ability of visitors to participate in recreational activities at the site or area. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period. Specific effects that could occur at each of the sites are discussed below. Also see Chapters 12, *Terrestrial and Biological Resources*, 17, *Socioeconomics*, 19, *Transportation*, and 23, *Noise* for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively.

Clarksburg Marina

Clarksburg Marina is a small marina on the Sacramento River with eight berths. It is on the west bank of the river across from a potential borrow and/or spoils area between Intakes 1 and 2. On-water and vehicular access to the marina and use of the marina's boating facilities would not be affected by land-based construction on the other side of the river. Boating opportunities would still be feasible at the marina during construction across the river. Use of the spoils/borrow area could last for 5–6 years and take place primarily Monday through Friday for up to 24 hours per day. Although marina access and boating opportunities would be maintained, construction would likely generate noise and visual setting disruptions that could adversely affect recreation at and in the vicinity of the marina.

Clarksburg Boat Launch (Fishing Access)

Potential effects on recreation at the Clarksburg Boat Launch (fishing access) would be similar to those described under Alternative 1A, Impact REC-2. Recreation use at the boat launch/fishing access site and up or downstream of Intake 3 would be affected by noise and visual setting disruptions associated with construction of the intakes and related facilities. Construction would

last about 4 years with construction of the intake and related facilities primarily ongoing Monday through Friday for up to 24 hours each day. Dewatering in the vicinity of Intake 3 also would be ongoing 7 days a week for 24 hours per day throughout excavation construction to provide a dry workspace.

Stone Lakes National Wildlife Refuge

As discussed under Impact REC-1, a portion of Stone Lakes NWR within the construction footprint consists primarily of private land within the approved refuge boundary that is part of the cooperative wildlife management area but is considered nonrefuge land. No public recreation facilities are located in or planned for this area of the NWR (U.S. Fish and Wildlife Service 2007a).

Public access lands within Stone Lakes NWR that would be affected by construction (primarily noise) are part of the core public use areas and include the Beach Lake and North Stone Lake Units of the NWR. These two units are open to the public two Saturdays a month for hiking, wildlife viewing, and interpretation activities, including docent-led seasonal wetland hikes. Environmental education also occurs in the Beach Lake Unit, as well as guided wildlife viewing and interpretation paddle trips on Lower Beach Lake and the Walk on the Wild Side Festival.

Because of the proximity of the alignment and associated construction work areas and borrow/spoil areas, there could be effects on wildlife viewing and environmental education opportunities. Construction would take place primarily Monday through Friday for up to 24 hours per day and last up to 7 years in this area. If construction activities were to make these two units of the NWR less hospitable for wildlife, then there would be temporary effects on wildlife viewing and some environmental education opportunities within the NWR (those that depend on the presence of wildlife). Hiking, interpretation, and some environmental education opportunities would still be feasible within the NWR; however, the recreation experience of refuge visitors may be affected by construction noise, resulting in reduced opportunities for wildlife viewing and visual disruptions. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating, depending on the location.

Cosumnes River Preserve

The Cosumnes River Preserve provides opportunities for fishing, hiking, paddling, wildlife viewing, and environmental education. A few specially designated areas have also been set aside for limited hunting. Fishing is allowed only from a boat, in the river. Although the construction footprint

traverses a portion of the Cosumnes River Preserve (McCormack-Williamson tract) west of Interstate 5, this portion of the alignment includes a tunnel component with no surface disturbance. A canal component of the alignment and associated construction would be immediately north of this portion of the Cosumnes River Preserve and Snodgrass Slough. Because of the proximity of the construction activities construction noise could have an effect on wildlife viewing and environmental education opportunities. The recreation experience of refuge visitors may also be adversely affected by construction activities because of noise disturbance. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

White Slough Wildlife Area—Pond 6

Effects on White Slough Wildlife Area would be similar to the adverse effects previously described for the Alternative 1B, Impact REC-1, above. Only the Pond 6 portion of the White Slough Wildlife Area is included within the construction impact area. Access to Pond 6 would be maintained from Woodbridge Road or a detour. Fishing and hiking opportunities could be affected by canal, siphon, and bridge construction from noise and visual setting disturbances. Construction of the canal and siphon would last up to 5 years; use of the potential borrow and/or spoil area could last from 4 to 6 years; bridge construction and related road work would last up to 1 year. Construction would take place primarily Monday through Friday for up to 24 hours per day. During this time wildlife viewing and hunting opportunities at this pond could be adversely affected. Other ponds within the White Slough Wildlife Area would be outside of the noise and visual impact areas and would remain available for recreation. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species.

Woodbridge Ecological Reserve

Both the North and the South Units of the Woodbridge Ecological Reserve (also known as the Isenberg Sandhill Crane Reserve) are within the construction impact area. The North Unit, north of Woodbridge Road, is east of the canal alignment and could be affected primarily from construction noise associated with the siphon and siphon work area at Hog Slough, the canal, the West Woodbridge Road bridge and bridge work area, temporary transmission line, and potential borrow and/or spoil area south of the preserve on the east side of the canal. Visitors can access this unit

only on a docent-led sandhill crane tour between October and February. Construction noise could affect wildlife viewing opportunities in this unit. Construction of the West Woodbridge Road bridge would be short-term, lasting up to 1 year. Other construction activities would last from 4 to 6 years. Construction would take place year-round, primarily Monday through Friday, for up to 24 hours per day. In areas where dewatering is needed to provide a dry workspace, it would be ongoing 7 days a week for 24 hours per day. Construction during sandhill crane viewing season (October through February) could adversely affect wildlife viewing opportunities at the site (to the point of prohibiting use)The area south of Woodbridge Road, called the South Unit, would be immediately west of a temporary potential borrow and/or spoil area. The South Unit is open to the public year-round and contains interpretive panels and a view platform for watching sandhill cranes. Similar to the White Slough Wildlife Area, opportunities for wildlife viewing would likely be unavailable in the South Unit because construction noise and activities close to the reserve would likely make the area temporarily less hospitable for wildlife, limiting wildlife viewing activities in areas near construction.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, implementation of AMMs would minimize the potential effects on greater sandhill crane. Mitigation measure BIO-75 would be available to address effects on sandhill crane habitat and the related effects on recreational wildlife viewing opportunities. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Visitors to both units of the Woodbridge Ecological Reserve would likely be able to see and hear nearby construction activities. Construction noise and the resulting reduced opportunities for wildlife viewing could affect the recreation setting in the vicinity of construction activities and degrade the recreation experience of visitors.

The Reserve at Spanos Park Golf Course

The Reserve at Spanos Park Golf Course is east of a temporary potential borrow and/or spoil area. Access to the golf course would be maintained using West Eight Mile Road or a detour. There may be additional truck traffic on Eight Mile Road during construction. Golfing opportunities would remain available although, golfers on the west side of the course may be able to both see and hear construction in the borrow/spoil area. Thus, construction could have a temporary negative effect on the recreation setting and golfers' recreation experiences. Use of the potential borrow/spoil area would last for up to 4 years with construction primarily Monday through Friday for up to 24 hours each day.

Paradise Point Marina

The Paradise Point Marina is located along Bishop Cut and Disappointment Slough east of the canal alignment, siphon at Disappointment Slough, and siphon work areas. Vehicular access to the marina would be maintained using Rio Blanco Road or a detour. On-water access to the marina would also

be maintained, and use of the marina's boating facilities would not be affected by canal and temporary siphon work area activities. Boating and picnicking opportunities would still be feasible at the marina during canal construction; however, the recreation experience of marina users may be adversely affected by construction activities. Construction of the canal, siphon, and use of the related work areas would last up to 5 years. Construction would take place primarily Monday through Friday for up to 24 hours each day. Recreation at the marina would be adversely affected by noise and visual setting disturbances.

Weber Point Yacht Club

The facilities for the Weber Point Yacht Club are on the northeast side of Hog Island along the San Joaquin River. The yacht club facilities are just outside of the impact area across the river from a potential borrow and/or spoil area. On-water access to the club's facilities would not be adversely affected by construction. There is no vehicular access to the club site. Use of the club's boating facilities would not be adversely affected by land-based construction of the borrow/spoil area on the other side of the San Joaquin River. Boating opportunities would still be feasible at the club site during construction of the borrow/spoil area across the river; however, the recreation experience of club members when on the water in the immediate vicinity north of Hog Island may be adversely affected by construction. Club members may be able to hear or see construction activities at the borrow/spoil area. Construction could temporarily negatively affect the recreation setting for club members and thus their recreation experiences.

Windmill Cove Resort & Marina

Windmill Cove Resort & Marina, located just off of the San Joaquin River south of Fourteenmile Slough, includes 25 berths and a launch ramp and provides camping and picnicking opportunities (Appendix 15A, *Privately Owned Recreation Facilities, by County*). The marina is east of a temporary borrow/spoil area associated with the tunnel siphon that would be installed under the San Joaquin River and a related work area. Vehicular access to the marina would be maintained using Windmill Cove Road or a detour. There may be additional truck traffic on Windmill Cove Road during construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by land-based construction activities. Construction and use of the potential borrow and/or spoils area in the vicinity of the San Joaquin River tunnel construction would last up to 4 years with construction ongoing primarily Monday through Friday for up to 24 hours each day. Boating, picnicking, and camping opportunities would still be available at the marina during construction at the adjacent borrow/spoil area; however, the recreation experience of marina users may be adversely affected by construction activities.

Because of the height of the levee near the marina, it is unlikely that the borrow/spoil area would be visible to marina users. However, marina users may be able to hear construction activity noise, which could temporarily negatively affect the recreation setting and their recreation experiences at the marina.

Buckley Cove: Marina West Yacht Club, Buckley Cove Boat Launch, River Point Landing Marina Resort, Ladd's Marina, Stockton Sailing Club, and Buckley Cove Park

A number of boating facilities are located at Buckley Cove: the Marina West Yacht Club, Buckley Cove Boat Launch, River Point Landing Marina Resort, Ladd's Marina, the Stockton Sailing Club, and Buckley Cove Park are on or near the San Joaquin River (Deep Water Ship Channel) and fall within the construction impact area associated with a large borrow and/or spoils area east and across the

channel from these sites. The River Point Landing Marina provides 160 berths, a ramp, and picnic facilities. Adjacent to the marina is the Stockton Sailing Club, which provides 288 berths (Appendix 15A, *Privately Owned Recreation Facilities, by County*). Ladd's Marina provides 146 berths. Vehicular access to these sites would be maintained using Buckley Cove Way. On-water access to the sites would also be maintained, and use of the boating facilities at all sites would not be adversely affected by construction use of the borrow and/or spoil area. Boating and picnicking opportunities would still be feasible at the marina and park, and boating would still be feasible at the sailing club during construction at the temporary work area; however, the recreation experience of marina users may be adversely affected by construction activities. Construction use of the borrow and/or spoil area would be ongoing for up to 4 years and would take place primarily Monday through Friday for up to 24 hours per day.

Clifton Court Forebay

Clifton Court Forebay recreation is described under Alternative 1A, Impact REC-2. As described for Alternative 1A, under Alternative 1B, access to the forebay would be maintained using Clifton Court Road or a detour. Construction of the Byron Tract forebay, control structures, and use of related potential borrow and/or spoils area would take up to 4 years (long term); installation of transmission lines would take up to 2 years (short term). Construction would primarily occur Monday through Friday for up to 24 hours per day. Construction noise could deter fish and wildlife during and after construction periods, affecting fishing and other recreational opportunities. The opportunities for visitors who use the southern part of the forebay would be affected the most because of its proximity to the proposed construction areas. Construction of the intermediate pumping plant canal approach segments would occur at a later time than the forebay and control structures—up to 3 years later—and would last for up to 1 year. The effects of this construction would be less than the initial forebay construction but could have similar short-term effects on recreation at the southern extent of the Clifton Court Forebay. Construction during waterfowl hunting season would potentially adversely affect recreational hunting to the degree that use is temporarily degraded. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, mitigation would be available to address the effect on nesting birds and waterfowl populations near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl, and benefitting recreationists by increasing wildlife viewing opportunities. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

The construction areas for the new facilities would likely not be visible from the main public forebay access point; however, visitors at the southern part of the forebay would be able to see the construction areas, which could affect the recreation setting and detract from their recreation experiences. Construction noise and the resulting reduced opportunities for fishing or hunting could also adversely affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.3, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Construction of Alternative 1B intakes and water conveyance facilities would result in disruption to recreational opportunities that would last from 1 to 5 years. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction. Although construction may occur year-round and last up to 9 years, construction in the vicinity of identified recreation facilities would last from 1 to 5 years and in-river construction would be primarily limited to June 1 through October 31 each year.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.3, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat

degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.3, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors such as recreation areas (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut

Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.3, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 1B intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts include reduced wildlife viewing opportunities at the Woodbridge Ecological Reserve. These impacts would be temporary, but may occur year-round and would occur over the long-term. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation

experience. Due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 1B. Temporary channel closures may also be required that could impede boat movement. Construction of intakes and siphons would include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary barge unloading facilities could also be located at the intake sites, spoil storage areas, or tunnel vent and shaft work areas. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion in high traffic areas, as could the placement of cofferdams or barge unloading facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could cause further boat traffic delays in the vicinity of the construction sites.

Intakes

The proposed locations of the intakes for Alternative 1B are the same as those described for Alternative 1A. Effects on boat passage and navigation would be the same as those described in Alternative 1A, Impact REC-3 above.

Direct adverse effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects would include obstruction and delays to boat passage and navigation as a result of channel obstructions to compliance with temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as water skiing, wakeboarding, or tubing are also low. In addition, there would be sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. Site-specific safety features, including determination of the speed-restriction zone would be developed under the Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Within the speed-restricted zones around the intake areas, high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Mitigation Measure TRANS-1a also involves providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps. Although there is sufficient width in the channel to allow boat passage, boaters could experience minor delays related to construction speed zones. However, this could still result in effects on boat navigation and related boating recreation (waterskiing, wakeboarding, tubing), which would be considered adverse because, although temporary, the effects would be long-term, lasting more than 2 years.

Temporary Barge Unloading Facilities

Alternative 1B includes a temporary barge unloading facility to be built on Fourteenmile Slough, at the junction of the slough and the San Joaquin River (Mapbook Figure M15-2). The facility would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. The facility would occupy about 1,000 feet of the west bank of the slough. The slough is about 150 feet wide at this location. Therefore, the barge facility and barge operations would occupy a substantial portion of the slough, constricting or preventing boat passage. However, the slough splits around an in-channel island at this location. The similarly sized channel on the east side of the in-channel island provides an alternate route for boaters to use in moving between the San Joaquin River and Fourteenmile Slough. The alternate route around the in-channel island would add less than 2,000 feet to the travel distance. Therefore, boaters would have the ability to avoid the barge facility, and effects on boat passage would be minor and temporary, lasting approximately 5 years. Construction of temporary barge unloading facilities would result in adverse effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where water skiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. These effects would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements and providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps.

Siphons

Construction of the seven siphons associated with Alternative 1B would result in temporary obstruction of boat passage and may also cause boat traffic delays or navigation hazards to boaters. The siphons would cross seven navigable waterways.

- Stone Lakes Drain
- Beaver Slough
- Hog Slough
- Sycamore Slough
- White Slough
- Middle River
- Disappointment Slough

Culvert siphons would be constructed using cofferdams and open cut-and-cover construction methods with conventional cast-in-place concrete structures. For most siphons, a bypass channel would be constructed to redirect the water away from the work area. For wider sloughs or where other restrictions exist, culvert siphons could be constructed in two or three phases, each phase lasting up to 1 year, depending on construction permit conditions. In each phase, a temporary cofferdam surrounding the work area would be installed that would occupy as much as one-half the width of the waterway.

Four of the seven navigable waterways to be crossed by a siphon (Stone Lakes Drain, Beaver Slough, Hog Slough, and Sycamore Slough) are on narrow, dead-end sloughs and within approximately 1 mile of the easternmost limit to navigation. The siphon under White Slough would be about 3 miles from the nearest marina facility, and the location does not appear to be a boat traffic thoroughfare given its relatively remote location in relation to waterways.

Boat traffic volume in the vicinity of these five siphons is expected to be low, and most waterway use is likely limited to anglers. The construction of siphons would temporarily impede boat movement on these waterways; however, because the waterways provide access to dead-end sloughs or do not support large boat traffic volumes, the temporary impediment on these waterways would not substantially alter boat movement in the Delta.

Boat traffic volume on Middle River in the vicinity of the siphon crossing has been observed to be low because of the narrow and shallow character of the waterway channel (California Department of Water Resources and Bureau of Reclamation 2005). Boat traffic volume in the vicinity of the Disappointment Slough siphon may be high at times because of the slough's proximity to Paradise Point Marina, which provides more than 200 boat berths and a boat ramp. However, boaters may also choose to bypass the siphon construction site by using other waterways in the vicinity, such as Bishop Cut and Fourteenmile Slough. The construction of siphons would temporarily obstruct boat movement on these waterways; however, because the waterways do not support large boat traffic volumes and alternative navigational routes are available, the temporary impediment on these waterways would not substantially alter boat movement in the Delta.

Although boats would not be able to use the portion of the waterway where construction of the siphons was occurring, the use of each of these waterways for recreational navigation would be allowed to continue during construction.

Changes to boat passage and navigation on the Sacramento River in the vicinity of the intakes, barge unloading facilities and the siphons would result in adverse direct and indirect effects on recreational navigation in the affected waterways. Direct effects would result from the creation of obstructions to boat passage and associated boat traffic delays and temporary channel closures that could impede boat movement. Changes to boat passage would also result in effects on recreational navigation and water-based recreation activities such as wakeboarding, waterskiing, and tubing. Although there may be short delays in boat passage, access to the affected waterways would be maintained. The sloughs where siphons would cross do not support large boat traffic volumes and construction activities would not result in substantial adverse effects. However, because boat passage and navigation would be disrupted, effects are considered adverse. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating community of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of

recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, effects on waterskiing, wakeboarding or tubing opportunities would last approximately 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Alternative 1B would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays and impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing, and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Overall, the effect on recreational fishing in the study area would be as described under Alternative 1A, Impact REC-4. As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.3, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. Siphons are proposed across Beaver, Sycamore, and Hog Sloughs, which are heavily used fishing areas. Fish and anglers may avoid this area because of construction activities. This may cause greater use of alternate fishing areas and result in a degraded fishing experience for anglers. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 1B may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.3, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 1B would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Alternative 1B would have the same operational scenario as Alternative 1A, and as shown in Table 15-12a and Table 15-12b, Alternative 1B would result in the same changes as discussed under Alternative 1A. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 1B (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 1B there would be from 1 to 20 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 1B cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 1B (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 1B.

No Action Alternative (2060) Compared to Alternative 1B (LLT-2060)

The comparison of Alternative 1B (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). Operation of Alternative 1B would result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds (Table 15-12a and Table 15-12b). In all but one instance (San Luis Reservoir), the CALSIM II modeling results indicate that reservoir levels under Alternative 1B operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake, and would be considered beneficial effects of Alternative 1B operations. Operation of Alternative 1B would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 1B because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 6 additional years which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. This is a less than 10% change and would not result in a substantial reduction in recreation opportunities or experiences. In addition, at the Basalt boat launch, which is accessible to elevation 340 feet, operations under Alternative 1B would result in only one additional

year for which reservoir elevations would fall below the recreation threshold relative to the No Action Alternative (2060) condition. This is also a less than 10% change and would not be considered a substantial reduction in recreation opportunities. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 1B (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. Operation of Alternative 1B would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the modeling indicates that reservoir levels could exceed the recreation threshold up to 6 additional years under Alternative 1B operations relative to the No Action Alternative (2060) condition. This is a less than 10% change and is not considered a substantial reduction in recreation opportunities or experiences at this reservoir. Overall, this impact would be less than significant, and these conditions represent improved recreation conditions under operation of Alternative 1B because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects of maintenance activities under Alternative 1B would be the same as described for Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term (2 years or less) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. Effects on boat passage and navigation resulting from the maintenance of intake facilities would be short-term and intermittent and would not be considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less-than-significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Maintenance activities for the proposed water conveyance facilities would not affect recreation opportunities because maintenance would take place within the individual facility right-of-way. The right-of-way under Alternative 1B includes the Stone Lakes NWR, White Slough Wildlife Area, and Cosumnes River Preserve; however, the lands in the Stone Lakes NWR and Cosumnes River Preserve in the right-of-way are not used for recreation, so there would be no effects on recreation opportunities. In the White Slough Wildlife Area (Pond 6) there would be a bridge right-of-way; facility maintenance activities would be restricted to roadway maintenance and would not affect recreation opportunities in the wildlife area. There would be no substantial long-term change to recreation opportunities as a result of maintenance of conveyance facilities; maintenance activities would be short-term and intermittent. There would be no effects.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation measures as part of Alternative 1B could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation measures would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation measures would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement conservation measures would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation measures under Alternative 1B would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation measures would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing,

angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.3). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation measures. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.3). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.3). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.3).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation measures under Alternative 1B would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.3). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.3).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. CM11 would also provide beneficial effects on boating opportunities by improving and expanding boating facilities within the study area. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.3). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.3). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation measures under Alternative 1B would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects to not adverse, and implementation of the measures would restore or enhance new potential sites for upland recreation thereby improving the quality of recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an

enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to work with DFW to provide alternate public hunting opportunities and access and address additional management costs resulting from increased inundation of the Yolo Wildlife Area resulting from CM2, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could result in the potential for incompatibilities with plans and policies related to protecting recreation resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues as overviewed in Section 15.2, Regulatory *Setting*. This overview of plan and policy compatibility evaluates whether Alternative 1B is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 1B on recreation resources is addressed in Impacts REC-1 through REC-11, and in other chapters such as Chapter 23, *Noise*, Section 23.3.3.3, and Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.3. The following is a summary of compatibility evaluations related to recreation resources for plans and policies relevant to the BDCP.

- The *New Melones Lake Area Final Resource Management Plan, Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area, General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, Folsom Lake State Recreation Area General Plan, Lake Oroville State Recreation Area Resource Management Plan and General Development Plan,* and *San Luis Reservoir State Recreation Area General Development Plan* all have policies or goals to protect the recreation resources and promote a range of opportunities to visitors to these areas. Construction and

operation of the proposed water conveyance facilities and other conservation measures would not affect recreation opportunities in these areas and would be compatible with these plans.

- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Delta Protection Act), *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan,* and *Brannan Island and Franks Tract State Recreation Areas General Plan* are all focused on the protection of resources, including recreation resources, within the Delta. These plans have policies, objectives, or goals intended to protect and enhance existing recreation and encourage development of new local and regional opportunities. Constructing the proposed conveyance facilities would result in long term disruption to existing established recreation areas in the study area and change the nature of the recreation setting. The proposed water conveyance elements could be considered incompatible with measures to protect existing recreation opportunities in the study area.
- The Delta Protection Act, the Delta Protection Commission's Great California Delta Trail System, and the *Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties* all promote development of a regional trail system providing a continuous regional recreational corridor to provide bikeways and hiking trails. The BDCP proponents would work with these regional and local efforts to design proposed restoration areas to be compatible with and complement the goals of creating a regional trail network and where feasible to adapt restoration proposals to incorporate recreational amenities and opportunities in these areas.
- Regional plans and those geared toward the management of specific areas, including the *Stone Lakes National Wildlife Refuge CCP, Cosumnes River Preserve Management Plan, Brannan Island and Franks Tract State Recreation Areas General Plan, Yolo Bypass Wildlife Area Land Management Plan, the Yolo County General Plan, Lower Sherman Island Wildlife Area Land Management Plan, San Francisco Bay Plan, Suisun Marsh Protection Plan,* and *Solano County General Plan Suisun Marsh Policy Addendum* are primarily designed to preserve and enhance the natural resource and recreation qualities of these areas. Implementing the BDCP alternatives may create disruptions related to facility and restoration improvements. Proposed restoration areas in the Yolo Bypass, on Sherman Island, and in Suisun Marsh would be designed to be compatible with and complement the current management direction for these areas and would be required to adapt restoration proposals to meet current policy established for managing these areas.
- The BDCP would be constructed and operate in compliance with regulations related to boat navigation jurisdiction, rules, and regulations enforced by local, state (including the California Department of Parks and Recreation's Division of Boating and Waterways), and federal (including the U.S. Coast Guard) boating law enforcement. The alternative would be compatible with California State Land Commission regulations related to recreational piers or marinas.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2012b). Recreation at these parks would not be affected by this alternative.
- Alternative 1B would result in the construction of permanent and temporary features associated with the proposed water conveyance facility across land governed by the general plans of Sacramento, San Joaquin, Contra Costa, and Alameda Counties. The county general plans all have policies related to the protection of recreation resources and encourage the development of new water-based and land-based recreation opportunities. Sacramento and San Joaquin Counties recognize the Delta as an area of international importance and as a major recreational resource

of these counties. Construction activities that disrupt and degrade recreation opportunities in the study area would be incompatible with policies designed to protect recreation resources, including those intended to protect open space and natural areas and those that discourage development of public facilities and infrastructure unless it is related to agriculture, natural resources and open space, and has recreational value.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.4 Alternative 1C—Dual Conveyance with West Alignment and Intakes W1–W5 (15,000 cfs; Operational Scenario A)

Table 15-14 lists the recreation sites and areas that may be affected by Alternative 1C (Mapbook Figure M15-3). Specific effects on recreation areas or sites are discussed below.

Table 15-14. Recreation Sites Potentially Affected during Construction of Alternative 1C

Recreation Site or Area	Primary Alternative Feature	Impact Source	Duration
Clarksburg Boat Launch	Intake 3; borrow and/or spoil site; temporary transmission lines	Noise and visual disturbances	Up to 6 years
Arrowhead Harbor Marina	Siphon at Miner Slough; siphon work area; canal; temporary transmission line	Noise and visual disturbances	Up to 4 years
Miner Slough Wildlife Area	Reusable tunnel material area	Noise and visual disturbances	Up to 6 years
Hidden Harbor Marina	Tunnel; tunnel ventilation/access shaft; temporary transmission line	Noise and visual disturbances	Up to 2 years
Delta Protection Lands, Grand Island	Tunnel; safe haven work area; barge unloading facility	Noise and visual disturbances	Up to 6 years
Twitchell Island	Tunnel; tunnel ventilation/access shaft; safe haven work area; temporary transmission line	Noise and visual disturbances	Up to 3 years
Franks Tract State Recreation Area	Tunnel; safe haven work area; temporary access road; temporary transmission line; temporary concrete batch plant	Noise and visual disturbances	Up to 2 years
Summer Lake Community Park	Tunnel work area; canal; temporary transmission line	Noise disturbance	Up to 6 years
Sycamore Drive Park	Tunnel work area; canal; siphon work area	Noise and visual disturbances	Up to 6 years
Clifton Court Forebay	Canal; Byron Tract Forebay; railroad work area; siphon; siphon work area; bridge; spoil area.	Noise and visual disturbances; access	Up to 4 years
Clifton Court Forebay	Control structures work area	Noise and visual disturbances	Up to 1 year
Lazy M Marina	Spoil site; siphon; siphon work area; railroad work area; Byron Tract Forebay	Noise and visual disturbances; access	Up to 3 years

Sources: GIS data layers available from DWR: CPAD, Green Info Network, 2011; USFWS Boundaries, USFWS 2012; Recreation Areas, AECOM/ICF 2012; Recreation Facilities, AECOM/ICF 2012.

Note: Construction duration information is approximate and subject to further revision.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 1C includes locating a tunnel segment of the west alignment, ventilation/access shaft, permanent access road to the tunnel shaft on Twitchell Island. The tunnel would run north to south, essentially through the middle of the island. A temporary work area would be located in the southernmost portion of the island adjacent to the proposed tunnel alignment. A temporary access road and temporary transmission line would also be installed for use during construction (up to 2 years). This temporary work area (safe haven area) and areas associated with the temporary access road and power-related features would be returned to pre-construction conditions. Twitchell Island is included in CDFW's Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on state-owned lands on Twitchell and Sherman Islands (California Department of Fish and Game 2009a). Both the canal alignment (tunnel portion) and a vent shaft would run underground through the hunting area (Table 15-14 and Mapbook Figure M15-3).

Permanently locating the tunnel, ventilation/access shaft, and permanent access road on Twitchell Island would not result in adverse effects on hunting or recreational opportunities on Twitchell Island postconstruction. Temporary effects that may occur as a result of construction are discussed under Impact REC-2, below.

***CEQA Conclusion*:** Alternative 1C conveyance facilities involve the tunnel, ventilation/access shaft, and permanent access road on Twitchell Island and would not result in adverse effects on hunting or recreational opportunities (Table 15-14 and Mapbook Figure M15-3). The alternative would not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** A total of 11 recreation sites are within the potential impact area under Alternative 1C (Table 15-14 and Mapbook Figure M15-3). Adverse effects on recreation may include restricted access to a recreation facility or use of an area; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction that could adversely affect the ability of visitors to participate in recreational activities at the site or area. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period. Effects specific to each area are described below. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.4, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.4, Chapter 19, *Transportation*, Section 19.3.3.4, and Chapter 23, *Noise*, Section 23.3.3.4, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively.

Clarksburg Boat Launch (Fishing Access)

The Clarksburg Boat Launch is north of Intake W3 site and within the impact area for the intake and related facilities, including a large potential borrow and/or spoils area that would be just west of County Road E9. In addition, a permanent access road would extend from County Road E9, southeast of the boat launch area, and a temporary transmission line would be installed along the county road,

also west of the boat launch area. Construction would last up to 6 years and would primarily occur Monday through Friday for up to 24 hours per day. Dewatering in the vicinity of Intake 3 also would be ongoing 7 days a week for 24 hours per day throughout excavation construction to provide a dry workspace. Construction of the intake would occur in the Sacramento River and on the west side of the river. Access to the Clarksburg Boat Launch site would be maintained using County Road E9 or a detour; access is not expected to be a concern because there is sufficient distance upstream to allow for continued use of the boating access facilities. However, construction noise could adversely affect fishing opportunities by making the site less desirable for fishing. On-water access to the site, as well as use of the boat ramp, would not be affected by activities downstream, upstream, or across the river.

Construction activities (transmission line, access road, and borrow/spoils area) would be visible from the site, although most of the Intake W3 site lies south of a bend in the river and may be out of view from onshore. In addition, construction noise from the intake, access road, temporary transmission lines, and borrow/spoils area could negatively affect the recreation setting and thus could affect the recreation experience of visitors participating in picnicking, boat launching, or fishing at the site.

Arrowhead Harbor Marina

Arrowhead Harbor Marina is located at the junction of Miner and Duck Sloughs. Construction north and east of the marina would include the canal, a siphon under Miner Slough, temporary transmission lines, and a permanent access road. Construction would last up to 4 years and would primarily occur Monday through Friday for up to 24 hours per day. Dewatering would likely be needed along the canal alignment possibly in the vicinity of the marina, and would be ongoing 7 days a week for 24 hours per day throughout excavation construction to provide a dry workspace. Arrowhead Harbor has 76 berths, a ramp, and picnic facilities. Vehicular access to the marina would be maintained using Holland Road or a detour. Traffic levels on Holland Road may increase because of construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction. Boating and picnicking opportunities would still be available at the marina during construction. Construction in Miner Slough may not be fully visible from the marina, although the boating experience for visitors to the marina would be affected by construction that would occur immediately east of the marina and along the slough. Construction near this marina would be temporary, but would result in long-term adverse effects on the recreation setting and recreation experiences at the marina and areas up and downstream Miner and Duck Sloughs.

Miner Slough Wildlife Area

The Miner Slough Wildlife Area provides bird watching, wildlife viewing, fishing and waterfowl hunting opportunities. Construction activities at a RTM area across the slough and east of the site would generate elevated noise and visual setting disruptions for visitors to this area (which is only accessible by boat). Construction would last up to 6 years and would primarily occur Monday through Friday for up to 24 hours per day. Construction noise and activities could adversely affect hunting and wildlife viewing opportunities. The construction noise could result in reduced opportunities for wildlife viewing and visual disruptions, degrading the recreation experience of visitors' at the wildlife area and on the water in the immediate vicinity of construction. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.4, mitigation would be available to address effects on nesting birds and waterfowl populations. In addition, over the longer term of the

action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating, depending on the location.

Hidden Harbor Marina

Hidden Harbor Marina is an all-sailboat facility located at the junction of Cache and Steamboat Sloughs, just west of the canal alignment. Related construction activities which would occur north and east of the marina include a tunnel ventilation and access shaft, a permanent access road, and a temporary transmission line. Construction would last up to 2 years and would primarily occur Monday through Friday for up to 24 hours per day. Vehicular access to the marina would be maintained using SR 84 or a detour. Traffic levels on SR 84 may increase because of construction On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction. Boating opportunities would still be available at the marina during canal tunnel construction; however, the recreation experiences of marina users may be affected by construction and noise. Construction activities in Steamboat Slough would not be visible to marina users. Marina users may be able to hear construction noise, however, which could temporarily affect the recreation setting and their recreation experiences at the marina. Because construction of these facilities would last 2 years or less, this is considered a short-term effect.

Delta Protection Lands

These lands on the southern tip of Grand Island between Steamboat Sough and the Sacramento River are designated Natural Reserve open space in the *Sacramento County General Plan* (Sacramento County 2011). The area is considered an important natural area supporting marsh and riparian habitat. Although there are no formal or designated recreation facilities, recreationists visiting the area, especially on the southeastern side near the Sacramento River temporary barge unloading facility, could be exposed to elevated noise for the duration of construction use of the barge which is anticipated to last up to 6 years. Construction would primarily occur Monday through Friday, for up to 24 hours per day.

Twitchell Island

Alternative 1C conveyance facilities, including the canal alignment (tunnel portion would run from north to south) through Twitchell Island. Related construction would include a tunnel ventilation/access shaft, a permanent road to the access shaft, a temporary work area (safe haven area), a permanent access road to the tunnel shaft, and temporary transmission line. Construction would last up to 3 years and would primarily occur Monday through Friday for up to 24 hours per day. Twitchell Island is part of CDFW's Delta Island Hunting Program, a late-season hunt for

pheasants and waterfowl (California Department of Fish and Game 2009a). These lands are available through the cooperation of DWR and CDFW does not have any management authority over these lands. As a result, hunting opportunities may vary from year to year depending on DWR projects and the management and cropping patterns of tenant farmers (California Department of Fish and Game 2009a).

Access to the area would be maintained using existing roads or detours. Construction noise and activities could adversely affect hunting opportunities, depending on the timing of construction although only a small portion of the island would be affected. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.4, mitigation would be available to address effects on nesting birds and waterfowl populations. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Miner Slough Wildlife Area* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Franks Tract State Recreation Area

Alternative 1C tunnel conveyance facility would run from north to south through the western portion of the Franks Tract State Recreation Area. Related construction activities north of Franks Tract State Recreation Area include tunnel access shaft construction, a temporary concrete batch plant, and temporary transmission line. South of Franks Tract State Recreation Area construction activities include a temporary safe haven work area, temporary access road, and a temporary transmission line. Construction would last up to 2 years and would primarily occur Monday through Friday for up to 24 hours per day. Franks Tract State Recreation Area, with most of its acreage underwater, is only accessible by water. Because of its limited access and fluctuating water levels, recreational use is by anglers and waterfowl hunters. Recreation activities such as boating and waterskiing also occur within the Franks Tract State Recreation Area. Boat access to the area would be maintained. Construction noise and activities could adversely affect hunting opportunities and the recreation experiences of hunters and anglers. Generally, the nature of construction in this area is less than in other parts of the alignment and anglers could relocate a short distance even to other areas within the recreation area. There would be little effect on boaters and waterskiing.

Sycamore Drive Park and Lakewood Drive Community Parks

Sycamore Drive (0.26 acre) and Lakewood Drive (0.58 acre) parks in the Summer Lake community in Oakley, provide localized recreation amenities including lawn areas, picnic tables, playground, and barbeque areas. Construction of the canal and use of a tunnel work area and a siphon work area in the immediate vicinity of these parks would adversely affect neighborhood recreation opportunities. Construction would last up to 6 years and primarily would occur Monday through Friday for up to 24 hours per day. Vehicular access to the parks within the neighborhood would not be affected. Recreation experiences of park users would be adversely affected primarily by construction noise. Construction areas would likely not be highly visible from either park area because of earthen berms that separate the community from adjacent land uses on the southwest.

Clifton Court Forebay

Clifton Court Forebay offers public fishing and hunting access from Lindeman Road on the west side of the forebay. There are no recreation facilities at the forebay; motorized boating, camping, and swimming are not allowed. Most fishing and hunting use at the forebay likely occurs along the west and south areas of the forebay, although some visitors walk or ride a bike around the forebay to reach other fishing and hunting locations.

Access to the forebay would be maintained using Clifton Court Road or a detour. Construction would take up to 5 years and would primarily occur Monday through Friday for up to 24 hours per day. Construction noise could deter fish and wildlife during and after construction periods, affecting fishing and other recreational opportunities. The opportunities for visitors who use the southern part of the forebay would be affected the most because of its proximity to the proposed construction areas. Construction during waterfowl hunting season would adversely affect recreational hunting (i.e., when hunting is permitted on Wednesdays) to the degree that use is temporarily degraded. Effects on weekend hunting (permitted on Saturdays and Sundays) could be less because construction equipment would not be operating. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.4, mitigation would be available to address the effect on nesting birds and waterfowl populations near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Miner Slough Wildlife Area* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

The construction areas for the new facilities would likely not be visible from the main public forebay access point; however, visitors at the southern part of the forebay would be able to see the construction areas, which could affect the recreation setting and detract from their recreation experiences. Construction noise and the resulting reduced opportunities for fishing or hunting could also adversely affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience.

The overall recreation experience for boaters or bank fishermen in the vicinity of construction areas would be diminished because of elevated noise levels and visual setting disruptions.

Lazy M Marina

Lazy M Marina is a private marina on Italian Slough west of Clifton Court Forebay. The marina is located southwest of the proposed Byron Tract Forebay, west and northwest of a spoil site, siphon, siphon work area, and east of a work area. Construction would last up to 3 years and would primarily occur Monday through Friday for up to 24 hours per day. Vehicular access to the site would be maintained by using Clifton Court Road or a detour. Water access to the marina may be affected during siphon and transmission line construction activities which would occur east of the marina. Siphon and transmission line construction activities require crossing Italian Slough. Marina users coming to and leaving the marina may experience delays as a result of in-slough construction

activities. The recreation experience of marina users would be adversely affected by construction activities and noise.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake W1 construction area and Clarksburg Marina falls between the construction impact area for Intakes W1 and W2. Similarly, Rivers End Marina & Boat Storage is not within the immediate construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these and other marinas or fishing sites fall outside of the impact area for noise and visual disruption, the overall recreation experience for boaters or fishermen in the vicinity of construction areas would be diminished because of the elevated noise levels as well as visual setting disruptions. In addition, recreation activities, fishing or boating, within the Fisherman's Cut between Bradford Island and Webb Tract would be disrupted by activities associated with tunnel placement including a concrete batch plant. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.4, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Construction of Alternative 1C intakes and water conveyance facilities would result in disruption to recreational opportunities that would last from 1 to 5 years. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction. Although construction may occur year-round and last up to 9 years, construction in the vicinity of identified recreation facilities would last from 1 to 5 years and in-river construction would be primarily limited to June 1 through October 31 each year.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could

indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.4, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.4, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 1C intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that would result in loss of public use. These impacts would be temporary, but may occur year-round and would occur over the long-term. Mitigation measures, environmental commitments, and AMMs would reduce these construction-

related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation on the Sacramento River and other waterways in the study area, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 1C. Construction of intakes and siphons would include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary barge unloading facilities could also be located at the intake sites. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion, as could the placement of cofferdams or barge unloading facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could delay boat traffic in the vicinity of the construction sites.

Intakes

Construction of the five Sacramento River intakes associated with Alternative 1C would result in temporary obstructions to boat passage and navigation and boat traffic delays in this reach of the Sacramento River. The planned locations of the intakes are generally the same as those proposed for Alternative 1A, as described previously, with the exception that intake facilities would be constructed on the west side of the river rather than the east side. As described in the discussion of Alternative 1A, Impact REC-3, the Sacramento River would remain navigable during construction; most of the river channel would remain open to passage. Site-specific safety features, including determination of the temporary speed-restriction zones would be developed under the Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Within the speed-restricted zones around the intake areas, high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Mitigation Measure TRANS-1a also involves providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps. Although there is sufficient width in the channel to allow boat passage, boaters could experience minor delays related to construction speed zones. However, this could still result in effects on boat navigation and related boating recreation (waterskiing, wakeboarding, tubing), which would be considered adverse because, although temporary, the effects would be long-term, lasting more than 2 years.

Siphons

Construction of the four siphons associated with Alternative 1C would result in temporary obstruction of boat passage and may also cause boat traffic delays or navigation hazards to boaters. The siphons would cross four navigable waterways.

- Elk Slough
- Miner Slough
- Rock Slough
- Italian Slough

Culvert siphons would be constructed as culvert structures using cofferdams and open cut-and-cover construction methods with conventional cast-in-place concrete structures. For most siphons, a bypass channel would be constructed to redirect water away from the work area. For larger sloughs or where other restrictions exist, culvert siphons could be constructed in two or three phases, each phase lasting up to 1 year, depending on construction permit conditions. In each phase, a temporary cofferdam would be installed that would occupy as much as one-half of the width of the waterway.

The siphon across Elk Slough is located about 2.6 miles upstream from where Elk Slough joins Sutter Slough. Elk Slough is a narrow, winding waterway with no recreation facilities. Upstream, passage to Elk Slough is blocked by the Sacramento River levee road; therefore, boats can enter the slough only from the downstream end.

The siphon location on Rock Slough is near the west end of the slough, where the slough meets the Contra Costa Canal and boat navigation ends.

Boat traffic volume in the vicinity of these two siphons is expected to be low, and most waterway use is likely by anglers. Effects on boat passage and navigation at the siphon locations on Elk Slough and Rock Slough would be minor.

The siphon location on Miner Slough is 2 miles west of where the waterway meets Sutter Slough and 5.3 miles upstream from where the waterway meets Cache Slough. Arrowhead Harbor Marina, with 76 boat berths, is a quarter-mile west of the siphon site. The siphon location on Italian Slough is located about one-third of a mile east of the west end of the slough, where navigation ends and where the Lazy M Marina is located, and about 2.5 miles west of the slough's junction with Old River. The marina provides about 35 berths, substantial dry storage, and a boat ramp and is likely the source of most boat traffic on Italian Slough.

Boat traffic volume in the vicinity of the siphons on Miner and Italian Sloughs may be high at times because of the proximity of these marinas. Because boat traffic would be confined to a limited portion of the channel by the cofferdams, increased boat traffic congestion is likely to occur during peak use times (primarily summer weekends). However, boaters may choose to bypass the siphon construction site on Miner Slough by using the reach between the marina and Cache Slough. Although boats would not be able to use the portion of the waterway where construction was occurring, the use of each of these waterways for recreational navigation would be allowed to continue during construction.

Temporary Barge Unloading Facilities

Alternative 1C includes two barge unloading facilities to be built on Cache Slough and the Sacramento River (Mapbook Figure M15-3). Construction and use of these facilities could also result in temporary effects on boat passage and navigation. The facilities would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. The adverse effects from the construction of the barge unloading facilities would be temporary, lasting approximately 5 years.

The Cache Slough barge facility would occupy about 1,200 feet of the east bank of the slough, just south of the junction with Miner Slough and the Sacramento River Deep Water Ship Channel. The slough is about 650 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain, and there would be little effect on boat passage. Also, boat traffic volume is likely low at this location, although some traffic moving between Miner Slough and Arrowhead Marina (located about 5 miles north on Miner Slough) and Cache Slough or the Sacramento River (3 miles to the south) would be expected.

The Sacramento River barge facility would be about 0.5 mile east of (upstream from) the river's junction with Cache Slough and would occupy about 500 feet of the south riverbank. The river channel is about 700 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain. However, peak boat traffic volume is likely to be high at this location. Viera's Resort, with 160 boat berths and a boat launch, and Long Island, with about 50 private homes with docks, are within 1 mile upstream. The City of Rio Vista, with two boat launches and a marina, is 2 miles downstream. Because boat traffic would be confined to a limited portion of the channel by the barge facility and barge unloading operations, increased boat traffic congestion may occur during peak use times (primarily summer weekends).

Alternative 1C would result in the creation of obstructions to boat passage causing boat traffic delays and impediments to boat movement. Overall, effects on temporary alteration of recreational navigation would be considered adverse. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. BDCP would contribute funds to further the DBW's aquatic weed control programs in the Delta. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure.

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, effects on waterskiing, wakeboarding or tubing opportunities would last approximately 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Alternative 1C would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays and impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing, and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore, considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Overall, the effect on recreational fishing in the study area would be as described under Alternative 1A, Impact REC-4. As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.4, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans,

hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5 Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 1C may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.4, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 1C would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

Alternative 1C would have the same operational scenario as Alternative 1A, and as shown in Table 15-12a and Table 15-12b, operation of Alternative 1C would result in the same changes as discussed

under Alternative 1A. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 1C (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 1C there would be from 1 to 20 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 1C cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 1C (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 1C.

No Action Alternative (2060) Compared to Alternative 1C (2060)

The comparison of Alternative 1C (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). Operation of Alternative 1C would result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds (Table 15-12a and Table 15-12b). In all but one instance (San Luis Reservoir), the CALSIM II modeling results indicate that reservoir levels under Alternative 1C operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake, and would be considered beneficial effects of Alternative 1C operations. Operation of Alternative 1C would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 1C because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 6 additional years which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. This is a less than 10% change and would not result in a substantial reduction in recreation opportunities or experiences. In addition, at the Basalt boat launch, which is accessible to elevation 340 feet, operations under Alternative 1C would result in only one additional year for which reservoir elevations would fall below the recreation threshold relative to the No Action Alternative (2060) condition. This is also a less than 10% change and would not be considered a substantial reduction in recreation opportunities. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 1C (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. Operation of Alternative 1C would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the modeling indicates that reservoir levels could exceed the recreation threshold up to 6 additional years under Alternative 1C operations relative to the No Action Alternative (2060) condition. This is a less than 10% change and is not considered a substantial reduction in recreation opportunities or experiences at this reservoir. Overall, this impact would be less than significant, and these conditions represent improved recreation conditions under operation of Alternative 1C because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Intake maintenance activities, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment, could have a minor effect on boat passage and navigation in the Sacramento River. Repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reduce opportunities for waterskiing, wakeboarding and tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment and these effects would be expected to be short-term (2 years or less). In addition, the areas around the proposed intakes are not usually used for waterskiing, wakeboarding and tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in periodic temporary but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. Effects on boat passage and navigation resulting from the maintenance of intake facilities would be short-term and intermittent and would not be considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects.

Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Maintenance activities for the proposed water conveyance facilities may include painting, landscaping, equipment replacement, and mechanical repairs that would be short-term and intermittent and would not affect recreation opportunities because maintenance would occur within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance activities would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effect on recreation opportunities as a result of maintenance of the proposed water conveyance facilities. There would be no effects.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 1C could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 1C would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the Study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased

onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.4). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.4). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.4). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.4).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 1C would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.4). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.4).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c

address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.4). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.4). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 1C would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented,

the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could result in the potential for incompatibilities with plans and policies related to protecting recreation resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues as overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 1C is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 1C on recreation resources is addressed in Impacts REC-1 through REC-11, and in other chapters such as Chapter 23, *Noise*, Section 23.3.3.4, and Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.4. The following is a summary of compatibility evaluations related to recreation resources for plans and policies relevant to the BDCP.

- The *New Melones Lake Area Final Resource Management Plan, Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area, General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, Folsom Lake State Recreation Area General Plan, Lake Oroville State Recreation*

Area Resource Management Plan and General Development Plan, and *San Luis Reservoir State Recreation Area General Development Plan* all have policies or goals to protect the recreation resources and promote a range of opportunities to visitors to these areas. Construction and operation of the proposed water conveyance facilities and other conservation measures would not affect recreation opportunities in these areas and would be compatible with these plans.

- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Delta Protection Act), *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan,* and *Brannan Island and Franks Tract State Recreation Areas General Plan* are all focused on the protection of resources, including recreation resources, within the Delta. These plans have policies, objectives, or goals intended to protect and enhance existing recreation and encourage development of new local and regional opportunities. Constructing the proposed conveyance facilities would result in long term disruption to existing established recreation areas in the study area and change the nature of the recreation setting. The proposed water conveyance elements could be considered incompatible with measures to protect existing recreation opportunities in the study area.
- The Delta Protection Act, the Delta Protection Commission's Great California Delta Trail System, and the *Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties* all promote development of a regional trail system providing a continuous regional recreational corridor to provide bikeways and hiking trails. The BDCP proponents would work with these regional and local efforts to design proposed restoration areas to be compatible with and complement the goals of creating a regional trail network and where feasible to adapt restoration proposals to incorporate recreational amenities and opportunities in these areas.
- Regional plans and those geared toward the management of specific areas, including the *Stone Lakes National Wildlife Refuge CCP, Cosumnes River Preserve Management Plan, Brannan Island and Franks Tract State Recreation Areas General Plan, Yolo Bypass Wildlife Area Land Management Plan, the Yolo County General Plan, Lower Sherman Island Wildlife Area Land Management Plan, San Francisco Bay Plan, Suisun Marsh Protection Plan,* and *Solano County General Plan Suisun Marsh Policy Addendum* are primarily designed to preserve and enhance the natural resource and recreation qualities of these areas. Implementing the BDCP alternatives may create disruptions related to facility and restoration improvements. Proposed restoration areas in the Yolo Bypass, on Sherman Island, and in Suisun Marsh would be designed to be compatible with and complement the current management direction for these areas and would be required to adapt restoration proposals to meet current policy established for managing these areas.
- The BDCP would be constructed and operate in compliance with regulations related to boat navigation jurisdiction, rules, and regulations enforced by local, state (including the California Department of Parks and Recreation's Division of Boating and Waterways), and federal (including the U.S. Coast Guard) boating law enforcement. The alternative would be compatible with California State Land Commission regulations related to recreational piers or marinas.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2012b). Recreation at these parks would not be affected by this alternative.
- Alternative 1C would result in the construction of permanent and temporary features associated with the proposed water conveyance facility across land governed by the general plans of Sacramento, San Joaquin, Contra Costa, and Alameda Counties. The county general plans all have

policies related to the protection of recreation resources and encourage the development of new water-based and land-based recreation opportunities. Sacramento and San Joaquin Counties recognize the Delta as an area of international importance and as a major recreational resource of these counties. Construction activities that disrupt and degrade recreation opportunities in the study area would be incompatible with policies designed to protect recreation resources, including those intended to protect open space and natural areas and those that discourage development of public facilities and infrastructure unless it is related to agriculture, natural resources and open space, and has recreational value.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.5 Alternative 2A—Dual Conveyance with Pipeline/Tunnel and Five Intakes (15,000 cfs; Operational Scenario B)

For the purposes of assessment of effects on recreation, Alternative 2A is the same as Alternative 1A, with the following exceptions.

- Under Alternative 2A, a total of five intake facilities would be constructed and operated. Intake locations are 1 through 3 in addition to either 4 and 5, or 6 and 7.
- The operations scenario for Alternative 2A differs from Alternative 1A (scenario B).
- An operable barrier would be placed at the head of Old River at the confluence with the San Joaquin River.

Table 15-11 under Alternative 1A lists the recreation sites and areas that may be affected by Alternative 2A (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed below.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of the post-construction location of water conveyance facilities associated with Alternative 2A would be similar to those described under Alternative 1A, Impact REC-1. Proposed placement of the Alternative 2A water conveyance facilities would not fall within the designated boundaries or conflict with any existing public use recreation site and would not result in the permanent disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Construction of Intakes 6 and 7 instead of Intakes 4 and 5 would not result in any additional permanent effects on recreation sites or areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.5, and Chapter 23, *Noise*, Section 23.3.3.5, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of temporarily disrupting the recreation opportunities and uses would be similar to those described under Alternative 1A, Impact REC-2. No additional recreation sites or areas would be affected if Intakes 6 and 7 were constructed instead of Intakes 4 and 5. Construction of Alternative 2A intakes and water conveyance facilities would result in temporary effects related to disruption of recreational opportunities and experiences at seven recreation sites in the study area during construction. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction impact area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay, and there are no recreation sites within the impact area for the operable barrier at the head of Old River and San Joaquin River. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.5, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1

through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources,* Section 12.3.3.5, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.5, Chapter 19, *Transportation*, Section 19.3.3.5, and Chapter 23, *Noise*, Section 23.3.3.5, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.5, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area

management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.5, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects

related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 2A intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of temporarily altering recreation navigation during construction of intakes and barge unloading facilities would be similar to those described under Alternative 1A, Impact REC-3. Construction of Intakes 6 and 7 instead of Intakes 4 and 5 would not result in substantially different effects on recreational navigation. Alternative 2A also would involve construction and operation of an operable barrier at the head of Old River (Mapbook Figure M15-1).

Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, or tubing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. These effects on boat passage and navigation would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements and providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps. Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

Construction of the six temporary barge unloading facilities would result in adverse effects on boat passage and navigation on waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading

facilities would be eliminated during construction. Construction of the operable barrier at the head of Old River would have only short-term effects on recreational boating access on Old River. The barrier would have a boat lock that would restore boating access once construction is complete.

Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). The barge unloading facilities would be removed after construction is complete and the operable barrier will include a boat lock to permit boat passage once construction is complete. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This component would not result in adverse effects on recreational navigation. Construction-related effects on recreational navigation in the vicinity of the barge unloading facilities would last up to 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes, temporary barge unloading facilities, and the operable barrier at the head of Old River. Impacts from intake and barge unloading facilities would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed construction and barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This would be a less-than-significant impact on recreational navigation on Old River.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

Effects on recreational fishing under Alternative 2A would be similar to those described under Alternative 1A, Impact REC-4. Construction of Intakes 6 and 7 instead of Intakes 4 and 5 would not be expected to result in substantially different effects on recreational fishing, although immediate local effects on any informal bank fishing that occurs near the intake sites could be shifted.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.5, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 2A may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.5, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 2A would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 2A would result in changes in the frequency with which the end-of-September reservoir levels at study area reservoirs fall below levels identified as water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 2A (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 2A there would be from 4 to 31 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, Lake Oroville, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 2A cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 2A (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 2A.

No Action Alternative (2060) Compared to Alternative 2A (2060)

The comparison of Alternative 2A (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

As shown in Table 15-12a and Table 15-12b, operation of Alternative 2A would primarily result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would fall below levels identified as important water-dependent recreation thresholds. Changes at San Luis Reservoir show greater difference when compared to the No Action Alternative (2060) than projected for the other reservoirs.

In comparisons of Alternative 2A (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 2A operations would vary from one reservoir to another and that most, with the exception of San Luis Reservoir, would experience little to no change or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not adversely affect water-dependent or water-enhanced recreation at these reservoirs and at Lake Oroville and Folsom Lake, there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. Operation of Alternative 2A would not adversely affect water-dependent or water-enhanced recreation at these reservoirs.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 2A (2060) conditions (25 years) relative to the No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be three additional years below the threshold). Therefore, because the Basalt boat launch would still be available for access to the reservoir, and the change in frequency with which the recreation threshold would be exceeded at Basalt is less than 10% (8 years or less), these changes in elevation at San Luis Reservoir under operation of Alternative 2A would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 2A (2060) operations would fall below the individual reservoir thresholds either with the same or reduced frequency than under the No Action Alternative (2060). These changes in reservoir elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Lake Oroville and Folsom Lake, because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative

2A (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). Operation of Alternative 2A would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, this would be a less-than-significant impact. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage, navigation, and water-based recreation activities as a result of maintenance of intake facilities and other structures under Alternative 2A would be similar to those described for Alternative 1A, Impact REC-7 and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation opportunities as a result of maintenance of conveyance facilities under Alternative 2A would be similar to those described for Alternative 1A, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 2A could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment

would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2A would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.5). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2

and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.5). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.5). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.5).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2A would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.5). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.5).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.5). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.5). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 2A would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2A would generally have the same potential for incompatibilities with one or more plans

and policies related to protecting and promoting recreation opportunities in the study area as described for Alternative 1A, Impact AES-12. Variation would result from two potentially different intake locations and inclusion of an operable barrier at the head of Old River. However, Intakes 6 and 7 and the operable barrier would fall under the same jurisdictions as discussed under Alternative 1A, and so, overall the potential for incompatibility is the same. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.6 Alternative 2B—Dual Conveyance with East Alignment and Five Intakes (15,000 cfs; Operational Scenario B)

For the purposes of assessment of effects on recreation, Alternative 2B is the same as Alternative 1B, with the following exceptions.

- Under Alternative 2B, a total of 5 intake facilities would be constructed and operated. Intake locations are 1 through 3 in addition to either 4 and 5, or 6 and 7.
- Alternative 2B has a different operations scenario (scenario B).
- An operable barrier would be placed at the head of Old River at the confluence with the San Joaquin River.

Table 15-13 under Alternative 1B lists the recreation sites and areas may be affected by Alternative 2B (Mapbook Figure M15-2). Specific effects on recreation areas or sites are discussed below.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of the post-construction location of water conveyance facilities associated with Alternative 2B would be similar to those described under Alternative 1B, Impact REC-1. Proposed placement of the Alternative 2B water conveyance facilities may fall within the boundaries of Stone Lakes NWR, Cosumnes River Preserve, and White Slough Wildlife Area Pond 6; however, permanent placement of these facilities (see discussion under Alternative 1B, Impact REC-1) would not result in long-term disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.6, and Chapter 23, *Noise*, Section 23.3.3.6, for additional discussion of these topics.

***CEQA Conclusion*:** Alternative 2B would not result in the location of water conveyance facilities that would permanently displace any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Construction-related temporary disruption of existing recreational facilities under Alternative 2B would be similar to that described under Alternative 1B, Impact REC-2. No additional recreation sites or areas would be affected if Intakes 6 and 7 were constructed instead of Intakes 4 and 5. Construction of Alternative 2B intakes and water conveyance facilities would result in temporary short-term and long-term effects related to disruption of recreational opportunities and experiences at 18 recreation sites or areas in the study area. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay, and there are no recreation sites within the impact area for the operable barrier at the head of Old River and San Joaquin River. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, 23.4.3.6, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources,* Section 12.3.3.6, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.6, Chapter 19, *Transportation*, Section 19.3.3.6, and Chapter 23, *Noise*, Section 23.3.3.6, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1B, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.6, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In

addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.6, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many

alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that would result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments.

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of temporarily altering recreation navigation during construction of intakes and barge unloading facilities would be similar to those described under Alternative 1B, Impact REC-3. Construction of Intakes 6 and 7 instead of Intakes 4 and 5 would not result in substantially different effects on recreational navigation. Alternative 2B also would involve construction and operation of an operable barrier at the head of Old River (Mapbook Figure M15-2).

Changes to boat passage and navigation on the Sacramento River in the vicinity of the intakes, barge unloading facilities and siphons would result in adverse direct and indirect effects on recreational navigation in the affected waterways. Direct effects would result from the creation of obstructions to boat passage and associated boat traffic delays and temporary channel closures that could impede boat movement. Changes to boat passage would also result in effects on recreational navigation and water-based recreation activities such as wakeboarding, waterskiing, and tubing. Although there may be short delays in boat passage, access to the affected waterways would be maintained. The sloughs where siphons would cross do not support large boat traffic volumes and construction activities would not result in substantial adverse effects. However, because boat passage and navigation would be disrupted, effects are considered adverse. Construction of the operable barrier at the head of Old River would have only short-term effects on recreational boating access on Old River. The barrier would have a boat lock that would restore boating access once construction is complete.

Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating community of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut).

The barge unloading facilities would be removed after construction is complete and the operable barrier will include a boat lock to permit boat passage once construction is complete. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This component would not result in adverse effects on recreational navigation. Nonetheless, construction-related effects on recreation navigation in the vicinity of intakes and barge unloading facilities on waterskiing, wakeboarding or tubing opportunities would last approximately 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Construction of Alternative 2B would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays and impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed construction and barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore considered significant and unavoidable. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This would be a less-than-significant impact on recreational navigation on Old River.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 2B would be similar to those described under Alternative 1B, Impact REC-4. Construction of Intakes 6 and 7 instead of Intakes 4 and 5 would not be expected to result in substantially different effects on recreational fishing, although immediate local effects on any informal bank fishing that occurs near the intake sites could be shifted.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section, 11.3.4.6, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 2B may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.6, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 2B would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Alternative 2B would have the same operational scenario as Alternative 2A, and as shown in Table 15-12a and Table 15-12b, Alternative 2B would result in the same changes in the frequency with which the end-of-September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) as discussed under Alternative 2A. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 2B (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 2B there would be from 4 to 31 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, Lake Oroville, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 2B cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 2B (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 2B.

No Action Alternative (2060) Compared to Alternative 2B (2060)

The comparison of Alternative 2B (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Table 15-12a and Table 15-12b, operation of Alternative 2B would primarily result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would fall below levels identified as important water-dependent recreation thresholds. Changes at San Luis Reservoir show greater difference when compared to the No Action Alternative (2060) than projected for the other reservoirs.

In comparisons of Alternative 2B (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 2B operations would vary from one reservoir to another and that most, with the exception of San Luis Reservoir, would experience little to no change or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not adversely affect water-dependent or water-enhanced recreation at these reservoirs and at Lake Oroville and Folsom Lake, there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. Operation of Alternative 2B would not adversely affect water-dependent or water-enhanced recreation at these reservoirs.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 2B (2060) (25 years) relative to No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be three additional years below the threshold). Therefore, because the Basalt boat launch would still be available for access to the reservoir, and the change in frequency with which the recreation threshold would be exceeded at Basalt is less than 10% (8 years or less), these changes in elevation at San Luis Reservoir under operation of Alternative 2B would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 2B (2060) operations would fall below the individual reservoir thresholds either with the same or reduced frequency than under the No Action Alternative (2060). These changes in reservoir elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Lake Oroville and Folsom Lake these changes would be considered beneficial effects on recreation opportunities and experiences under Alternative 2B operations because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative 2B (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). Operation of Alternative 2B would not

substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, this would be a less-than-significant impact. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** The effects of maintenance activities on water-based recreation under Alternative 2B would be similar to those described under Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** The effects of maintenance activities on land-based recreation under Alternative 2B would be similar to those described under Alternative 1B, Impact REC-8 and would not affect recreation opportunities. The right-of-way under Alternative 2B includes the Stone Lakes NWR, White Slough Wildlife Area, and Cosumnes River Preserve; however, the lands in the Stone Lakes NWR and Cosumnes River Preserve in the right-of-way are not used for recreation, so there would be no effects on recreation opportunities. In the White Slough Wildlife Area (Pond 6) there would be a bridge right-of-way; facility maintenance activities would be restricted to roadway maintenance and would not affect recreation opportunities in the wildlife area. Maintenance would be short-term and intermittent and there would be no long-term change to recreation opportunities as a result of maintenance of conveyance facilities. There would be no effects.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 2B could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with

implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2B would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.6). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.6). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.6). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.6).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2B would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.6). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.6).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.6). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.6). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 2B would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2B would generally have the same potential for incompatibilities with one or more plans

and policies related to preserving the visual quality and character of the Delta as described for Alternative 1B, Impact AES-12. Intakes 6 and 7 would be located farther south than Intakes 4 and 5, between Grand Island Road and the town of Vorden, and the operable barrier would be at the head of Old River. These features would fall under the same jurisdictions as discussed under Alternative 1B, and so, overall the potential for incompatibility is the same. As described under Alternative 1B, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect recreation opportunities in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.7 Alternative 2C—Dual Conveyance with West Alignment and Intakes W1–W5 (15,000 cfs; Operational Scenario B)

For the purposes of assessment of effects on recreation, Alternative 2C is the same as Alternative 1C, with the following exception.

- The operations scenario for Alternative 2C differs from Alternative 1C (scenario B).
- An operable barrier would be placed at the head of Old River at the confluence with the San Joaquin River.

Table 15-14 under Alternative 1C lists the recreation sites that may be affected by Alternative 2C.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 2C includes locating a tunnel, ventilation/access shaft and permanent access road to the tunnel shaft on Twitchell Island, and would have the same effects as discussed under Alternative 1C, Impact REC-1. Twitchell Island is included in CDFW's Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on state-owned lands on Twitchell and Sherman Islands (California Department of Fish and Game 2009c). Both the canal alignment (tunnel portion) and a vent shaft would run underground through the hunting area (Mapbook Figure M15-3).

Permanently locating the tunnel, ventilation/access shaft, and permanent access road on Twitchell Island would not result in adverse effects on hunting or recreational opportunities on Twitchell Island post-construction. Temporary effects that may occur as a result of construction are noted under Impact REC-2, below. Also see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.7, and Chapter 23, *Noise*, Section 23.3.3.7, for additional discussion of these topics.

***CEQA Conclusion*:** Alternative 2C would not result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Direct effects on recreation opportunities associated with construction of proposed water conveyance facilities under Alternative 2C would be the same as those described under Alternative 1C, Impact REC-2. Construction of Alternative 2C facilities would result in temporary short-term and long-term effects related to disruption of well-established recreational opportunities and experiences at recreation sites or areas in the Study area Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of the Intake W1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Rivers End Marina & Boat Storage is not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay, and there are no recreation sites within the impact area for the operable barrier at the head of Old River and San Joaquin River. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.7, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.7, Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.7, Chapter 19, *Transportation*, Section 19.3.3.7, and Chapter 23, *Noise*, Section 23.3.3.7 for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1C, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.7, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In

addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.7, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many

alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 2C intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation on the Sacramento River and other waterways in the study area under Alternative 2C would be the same as those described for Alternative 1C. Alternative 2C would also involve construction of an operable barrier at the head of Old River. Construction of Alternative 2C would result in the creation of obstructions to boat passage causing boat traffic delays, and impediments to boat movement. Overall, effects on temporary alteration of recreational navigation would be considered adverse. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity

downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut).

The barge unloading facilities would be removed after construction is complete and the operable barrier will include a boat lock to permit boat passage once construction is complete. Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This component would not result in adverse effects on recreational navigation.

Construction-related effects on recreational navigation in the vicinity of the intakes and barge unloading facilities would last approximately 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Alternative 2C would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays, impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing, and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to construction and management of barges and stipulations to notify the commercial and leisure boating communities of proposed construction and barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating

alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Construction of the operable barrier would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. This would be a less-than-significant impact on recreational navigation on Old River.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 2C would be similar to those described under Alternative 1A, Impact REC-4. As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.7, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned

(AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 2C may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.7, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 2C would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Alternative 2C would have the same operational scenario as Alternative 2A, and as shown in Table 15-12a and Table 15-12b, Alternative 2C would result in the same changes in the frequency with which the end-of-September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison)as discussed under Alternative 2A. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 2C (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 2C there would be from 4 to 31 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, Lake Oroville, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 2C cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 2C (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 2C.

No Action Alternative (2060) Compared to Alternative 2C (2060)

The comparison of Alternative 2C (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Table 15-12a and Table 15-12b, operation of Alternative 2C would primarily result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would fall below levels identified as important water-dependent recreation thresholds. Changes at San Luis Reservoir show greater difference when compared to the No Action Alternative (2060) than projected for the other reservoirs.

In comparisons of Alternative 2C (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 2C operations would vary from one reservoir to another and that most, with the exception of San Luis Reservoir, would experience little to no change or would fall below the individual reservoir thresholds less frequently than under No

Action Alternative (2060) conditions. These changes in reservoir elevations would not adversely affect water-dependent or water-enhanced recreation at these reservoirs and at Lake Oroville and Folsom Lake, there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. Operation of Alternative 2C would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 2C (2060) (25 years) relative to No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be three additional years below the threshold in 2060). Therefore, because the Basalt boat launch would still be available for access to the reservoir, and the change in frequency with which the recreation threshold would be exceeded is less than 10% (8 years or less), these changes in elevation at San Luis Reservoir under operation of Alternative 2C would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

CEQA Conclusion: This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 2C (2060) operations would fall below the individual reservoir thresholds either with the same or reduced frequency than under the No Action Alternative (2060). These changes in reservoir elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Lake Oroville and Folsom Lake, because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative 2C (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). Operation of Alternative 2C would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, this would be a less-than-significant impact. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes to boat passage and navigation as a result of maintenance of structural facilities under Alternative 2C would be the same as described for Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation,

or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes in opportunities for land-based recreation as a result of maintenance of conveyance facilities under Alternative 2C would be the same as described for Alternative 1C, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 2C could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2C would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would

increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.7). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.7). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.7). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.7).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2C would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.7). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.7).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2 Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c

address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.7). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise,* Section 23.3.3.7). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 2C would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented,

the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2C would generally have the same potential for incompatibilities with one or more plans and policies related to protecting recreation resources in the study area as described for Alternative 1C, Impact AES-12. Variation would result from construction of an operable barrier at the head of Old River. However, the operable barrier would fall under the same jurisdictions as discussed under Alternative 1C, and so, overall the potential for incompatibility is the same. As described under Alternative 1C, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of San Joaquin County, the alternative may be incompatible with county general plan policies that protect recreation resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.8 Alternative 3—Dual Conveyance with Pipeline/Tunnel and Intakes 1 and 2 (6,000 cfs; Operational Scenario A)

For the purposes of assessment of effects on recreation, Alternative 3 is the same as Alternative 1A, with the following exceptions.

- Alternative 3 includes Intakes 1 and 2 only.
- Alternative 3 has a different operations scenario (6,000 cfs).

Table 15-11 lists the recreation sites and areas that may be affected by Alternative 3, except that sites or areas affected by Intakes 3, 4, or 5, would not be affected under this alternative (Clarksburg Fishing Access) (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed under Alternative 1A.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreation as a result of the post-construction location of water conveyance facilities associated with Alternative 3 would be the same as those described under Alternative 1A, Impact REC-1, although, there would be only two intake locations under Alternative 3. The proposed location of the intake facilities, tunnels, and associated water conveyance facilities would not lie within the designated boundaries of an existing public use recreation site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.8, and Chapter 23, *Noise*, Section 23.3.3.8, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary disruption of recreation opportunities or experiences under Alternative 3 would be similar to those described for Alternative 1A; however, only two intake locations would be constructed under Alternative 3 (Intakes 1 and 2). Effects associated with Alternative 3 construction of physical components would be anticipated to be less severe relative to Alternative 1A for the Clarksburg Fishing Access and Stone Lakes NWR because Intakes 3, 4, and 5 would not be constructed. Construction of Alternative 3 intakes and water conveyance facilities would result in temporary effects related to disruption of recreational opportunities and experiences at five recreation sites in the study area during construction. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.8, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or area, and in-river construction activities primarily would be limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.8, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.8, Chapter 19, *Transportation*, Section 19.3.3.8, and Chapter 23, *Noise*, Section 23.3.3.8, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation

Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.8, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and

Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.8, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 3 intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and

environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation on the Sacramento River and other waterways in the study area, including direct effects on boat passage related to the creation of obstructions and associated boat traffic delays, would be similar to those described for Alternative 1A; however, only two intake locations would be constructed under Alternative 3 (Intakes 1 and 2). While effects associated with this alternative would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, or tubing are also low. In addition, there would be sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. These effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

Construction of temporary barge unloading facilities would result in adverse effects on boat passage and navigation on the Sacramento River and other waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed construction and barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity

downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 3 would be similar to those described under Alternative 1A, Impact REC-4. However, only two intake locations (Intakes 1 and 2) would be constructed under Alternative 3, so effects associated with construction of physical components would be anticipated to be less severe.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.8, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Under this commitment, RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 3 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.8, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 3 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 3 would result in changes in the frequency with which the end of September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 3 (LLT-2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 3 there would be from 1 to 20 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 3 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 3 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 3.

No Action Alternative (2060) Compared to Alternative 3 (2060)

The comparison of Alternative 3 (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

In comparisons of Alternative 3 (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 3 operations, with the exception of San Luis Reservoir, would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) (Table 15-12a and Table 15-12b). These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Oroville Reservoir, Folsom Lake, and New Melones Lake and would be considered beneficial effects of Alternative 3 operations. Operation of Alternative 3 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 3 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 8 additional years relative to the No Action Alternative (2060) condition for which the reservoir level would fall below the reservoir boating threshold for the Dinosaur Point boat launch. This is a less than 10% change and would not

result in a substantial reduction in recreation opportunities or experiences. In addition, at the Basalt boat launch, which is accessible to elevation 340 feet, operations under Alternative 3 (2060) would result in one less year for which reservoir elevations would fall below the recreation threshold relative to the No Action Alternative (2060) condition. This is considered a beneficial effect on recreation opportunities. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 3 (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. Operation of Alternative 3 would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the modeling indicates that under Alternative 3 (2060) operations relative to the No Action Alternative (2060), reservoir levels could exceed the recreation threshold up to 8 additional years at the Dinosaur Point boat launch, while access to the Basalt boat launch would not substantially change (one less year). These are less than 10% changes and would not result in a substantial reduction in recreation opportunities or experiences at this reservoir. Overall, these conditions represent improved recreation conditions under operation of Alternative 3 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities under Alternative 3 would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for two intake facilities under this alternative. Maintenance would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because

impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation opportunities as a result of maintenance of conveyance facilities under Alternative 3 would be similar to those described for Alternative 1A, Impact REC-8; however, under Alternative 3, only two intake facilities would be constructed. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 3 could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 3 would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing,

angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.8). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation,* Section 19.3.3.8). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.8). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.8).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation measures under Alternative 3 would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.8). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.8).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.8). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.8). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 3 would have similar impacts on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding

mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 3 would generally have the same potential for incompatibilities with one or more plans and policies related to protecting and promoting recreation opportunities in the study area as described for Alternative 1A, Impact AES-12. The primary difference under Alternative 3 is that only Intakes 1 and 2 would be constructed. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.9 Alternative 4—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)

Alternative 4 includes the construction of three north Delta intake facilities (Intakes 2, 3, and 5) between Clarksburg and Walnut Grove.) An operable barrier would be placed at the head of Old River at the confluence with the San Joaquin River. Table 15-15 lists the recreation sites and areas that may be affected by Alternative 4. Clifton Court Forebay and Cosumnes River Preserve are the

only recreation facilities that fall within the construction footprint (Mapbook Figure M15-4). Specific effects on recreation areas or sites are discussed below.

Table 15-15. Recreation Sites Potentially Affected by Construction of Alternative 4

Recreation Site or Area	Primary Alternative Feature	Potential Impact Source	Duration
Stone Lakes National Wildlife Refuge	Intake; Potential Borrow Area; Shaft Location; Reusable Tunnel Material Area; Temporary Work Area; Transmission Lines; Geotechnical Exploration	Noise and visual disturbances	Ongoing; up to 10.5 years (long term)
Clarksburg Boat Launch (Fishing Access)	Intake; Intake Work Area; Geotechnical Exploration	Noise and visual disturbances	Ongoing; up to 7.5 years (long term)
Cosumnes River Preserve	Safe Haven Work Areas; Tunnel Work Areas; Geotechnical Exploration; Shaft Locations; Reusable Tunnel Material Area; Transmission Line; Temporary Access Roads; Permanent Access Road	Surface impact; Noise and visual disturbances	Ongoing; up to 12.5 years (long term)
Wimpy's Marina	Geotechnical Exploration	Noise and visual disturbances	Up to 2.5 years (long term)
Delta Meadows	Forebay and Spillway; Geotechnical Exploration; Permanent Access Road; Barge Unloading Facility	Noise and visual disturbances	Ongoing; up to 7.5 years (long term)
Bullfrog Landing Marina	Temporary Access Road	Noise and visual disturbances	Up to 11 years (long term)
Clifton Court Forebay	Siphon; Trenchless Crossing; Canals; Control Structure; Forebay; Forebay Embankment Area; Forebay Overflow Structure; New Forebay; Power Transmission Relocation; Reusable Tunnel Material Area; Shaft Location; Barge Unloading Facility; Canal Work Area; Control Structure Work Area; Forebay Dredging Area; Forebay Outlet Structure; Geotechnical Exploration Zone; Tunnel Muck Conveyor Facility; Electrical Substation; Facility Access Road; Gravity-Bypass Channel Spillway; Intake; MCC/Electrical Building; Office Trailer; Piping; Pumping Plant; Rebar Cage Assembly Area; Staging Area; Storage/Detention Tank; Surge Shaft; Water Treatment Facility	Surface impact; Noise and visual disturbances	Ongoing; up to 13 years (long term)
Lazy M Marina	Permanent Access Road	Noise and visual disturbances	Ongoing; up to 11 years (long term)

Sources: GIS data layers available from DWR: CPAD, Green Info Network, 2011; USFWS Boundaries, USFWS 2012; Recreation Areas, AECOM/ICF 2012; Recreation Facilities, AECOM/ICF 2012; Air quality construction equipment and scheduling assumptions as described in Appendix 22B, *Air Quality Assumptions*.

Note: Construction duration information is approximate and subject to further revision.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 4 conveyance facilities include elements that would be permanently located in two existing recreation areas: Cosumnes River Preserve and Clifton Court Forebay (Table 15-15 and Mapbook Figure M15-4). Additionally, proposed RTM areas near Twin Cities Road could interfere with recreational-related activities on DWR-owned parcels that currently host a water ski school and a venue for hound races.

An RTM area would be built to the north of Cosumnes River Preserve, southeast of the intermediate forebay. An east-west permanent transmission line would be constructed adjacent to the northern boundary of the preserve along Lambert Road, where CDFW manages the lands as an ecological reserve. There is no public access permitted within this part of the preserve; therefore, the placement of the transmission line would not displace any recreational facilities. A tunnel running north to south would be located northeast of Walnut Grove from the intermediate forebay south through Staten Island in land managed by The Nature Conservancy. Tunnel construction would be underground and would not permanently displace any recreation facilities or lands within the preserve. No recreational opportunities would be permanently displaced, disrupted, or relocated by placement of the tunnel at this location. Two sets of tunnel shafts with permanent access roads, would be built on Staten Island. Most recreation takes place near the visitor's center near Middle Slough, approximately 1.5 miles east of the construction footprint. Recreationists use North Staten Island Road for wildlife viewing, but there are no formal recreation facilities in the western areas of the preserve. Temporary features would be returned to preconstruction conditions. The placement of shaft locations and permanent access roads would cause permanent surface impacts and would permanently displace portions of the preserve that may be used by recreationists. However, they would not result in the permanent loss or closure of a facility or activity because visitors would still be able to access North Staten Island Road for wildlife viewing. While recreational activities could be disrupted at ponds used for water ski instruction and hound racing, access to these parcels is subject to lease agreements with DWR. Due to the nature of these lease agreements, these activities could not reasonably be expected to continue for the long-term with any definitiveness, therefore, these facilities would not be considered long-term and/or well-established recreational facilities. Additionally, regardless of any disruption in these activities, there would continue to be extensive opportunities for waterskiing throughout the Delta. BDCP proponents would also contribute funds for the construction of new recreation opportunities, including hunting opportunities, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* Sections 3B.3.2 and 3B.3.3. Therefore, the location of the proposed water conveyance facilities would not result in the permanent displacement of existing well-established public use or private commercial recreation facilities, and would not cause adverse effects.

In the Clifton Court Forebay, combined pumping plant facilities, a permanent siphon, canals, a new forebay and new embankment areas, control structures, shaft locations, power transmission lines, a gravity-bypass spillway, a new forebay, and a forebay overflow structure would be built. A permanent reusable tunnel material area would be built northwest of Italian Slough, adjacent to the Clifton Court Forebay recreation area, and is not anticipated to hinder recreation opportunities. Permanent transmission lines, and a dredging area would also be built. While RTM areas are considered permanent surface impacts for the purposes of impact analysis, it is anticipated that the RTM would be removed from these areas and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse

identified for the material, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*. There are no formal recreation facilities at Clifton Court Forebay, although well-established recreation, mostly fishing and hunting, takes place at the southern end of the forebay along the embankment. This access would be lost during construction, but once new embankments are built, recreation could again occur. The post-construction location of the water conveyance facilities would not result in permanent displacement of well-established recreation facilities available for public access. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, Aesthetics and Visual Resources, Section 17.3.3.9, and Chapter 23, Noise, Section 23.3.3.9, for additional discussion of these topics.

CEQA Conclusion: The alternative would include the placement of permanent shaft locations, transmission lines, and access roads that would cause permanent surface impacts to Cosumnes River Preserve and would displace portions of the preserve that may be used by recreationists. Permanent noise and visual impacts would occur from a RTM areas adjacent to Cosumnes River Preserve. However, these would not result in the permanent loss or closure of a facility or activity because visitors would still be able to access North Staten Island Road for wildlife viewing. While recreational activities could be disrupted at ponds used for water ski instruction and hound racing, access to these parcels is subject to lease agreements with DWR. Due to the nature of these lease agreements, these activities could not reasonably be expected to continue for the long-term with any definitiveness, therefore, these facilities would not be considered long-term and/or well-established recreational facilities. Additionally, regardless of any disruption in these activities, there would continue to be extensive opportunities for waterskiing throughout the Delta. BDCP proponents would also contribute funds for the construction of new recreation opportunities, including hunting opportunities, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, Sections 3B.3.2 and.3B.3.3. In the Clifton Court Forebay, combined pumping plant facilities, a permanent siphon, canals, a new forebay and new embankment areas, a control structure, shaft locations, a forebay overflow structure, and a reusable tunnel material conveyor and facility would be built. A permanent reusable tunnel material area, along with a temporary fuel station and temporary concrete batch plant would be built northwest of Italian Slough, adjacent to the Clifton Court Forebay recreation area, are not anticipated to hinder recreation opportunities. There are no formal recreation facilities at Clifton Court Forebay, although well-established recreation, mostly fishing and hunting, takes place at the southern end of the forebay along the embankment. This access would be lost during construction, but once new embankments are built, recreation could again occur. The post-construction location of the water conveyance facilities would not result in permanent displacement of well-established recreation facilities available for public access. Therefore, this alternative would not result in the permanent displacement of well-established public use or private commercial recreation facilities available for public access. Impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: Two recreation sites, Clifton Court Forebay and Cosumnes River Preserve, are within the construction footprint. A total of six recreation sites or areas are within the 1,200 to 1,400-foot indirect impact area associated with aboveground construction of the proposed water conveyance facilities (CM1) (see Chapter 23, *Noise*, Section 23.3.3.9). The effects that could occur at each potentially affected recreation site are discussed below. Potential indirect effects on recreation

include access, construction noise, and changes in the visual character of the area surrounding the recreation sites, as well as reduced wildlife-related recreational opportunities due to nearby noise effects. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.9, Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.9, Chapter 19, *Transportation*, Section 19.3.3.9, and Chapter 23, *Noise*, Section 23.3.3.9, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively.

Stone Lakes National Wildlife Refuge

Private and public use areas within the Stone Lakes NWR fall within the indirect impact area. No public recreation facilities are located on the privately held lands within the NWR boundary (U.S. Fish and Wildlife Service 2007a). The public use areas of Stone Lakes NWR include the Beach Lake and North Stone Lake Units of the NWR.

The northern section of Stone Lakes NWR is adjacent to Intakes 2 and 3, and the southern portion is approximately 1 mile from Intake 5. Recreation does occur in the northernmost section of Stone Lakes NWR, which would be east of a temporary work area and a RTM area associated with Intake 2 and could cause noise and visual disturbances to recreationists. Geotechnical exploration would occur along the tunnel corridor, to the east of Stone Lakes NWR, for up to 2.5 years. Exploration methods would include soil borings and conventional piezocones and seismic cones, as well as sampling for gas within soils and groundwater at selected locations. Construction of the intakes and temporary work areas could also cause noise and visual disturbances to recreationists. Construction of the proposed 230 kV and 69 kV temporary transmission lines would be constructed to the west and south of the North Stone Lake Unit, and could cause noise and visual disturbances to visitors in the refuge for up to 1.5 years. Access to the refuge would be preserved, but because of the proximity of the alignment and associated construction work areas and borrow/spoil areas, there could be effects on wildlife viewing and environmental education opportunities within the Stone Lakes NWR. Because construction would primarily occur Monday through Friday, year-round, there could be temporary effects on wildlife viewing and some environmental education opportunities that depend on the presence of wildlife. Construction related to intakes could take up to 7 years. Hiking, interpretation, and some environmental education opportunities would still be feasible within the NWR; however, refuge visitors would experience a long-term reduction of recreation opportunities and experiences due to construction noise and visual disruptions, resulting in reduced opportunities for wildlife viewing. However, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat and recreational opportunities. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.9, mitigation would be available to address effects on nesting birds, waterfowl populations, and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will

include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating, depending on the location. Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, and subsidence reversal.

Clarksburg Boat Launch (Fishing Access)

The Clarksburg Boat Launch is on the west bank of the Sacramento River across the river from the proposed Intake 3 site. Access to the Clarksburg Boat Launch would be maintained using County Road E9 (also referred to as County Highway [CH] or Old River Road); access would not be expected to be a concern because most of the construction activity would take place on the east side of the Sacramento River. On-water access to the fishing site, as well as use of the boat ramp, would not be affected by construction. Indirect construction noise effects on recreation in the vicinity of the Clarksburg Boat Launch would last about 5 years with construction of the intake and related facilities primarily ongoing Monday through Friday for up to 24 hours each day. This would be considered a long-term adverse effect. Geotechnical exploration would occur along the tunnel corridor, to the east of Clarksburg Boat Launch, for up to 2.5 years. In addition, because of the relatively high groundwater level at all intake locations and pumping plant sites, dewatering would be necessary to provide a dry workspace. As discussed in Chapter 3, *Description of Alternatives*, Section 3.6.1, dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels. Construction of the intake in this area would be long term and would also substantially alter the recreation setting for views from the boat launch/fishing access site. Therefore, constructing the proposed water conveyance facilities would result in long-term reduction of recreational opportunities or experiences.

Cosumnes River Preserve (Private Lands and CDFW Ecological Reserve)

Cosumnes River Preserve provides opportunities for limited fishing and hunting, hiking, paddling, wildlife viewing, and environmental education. Because public access is concentrated around the visitor center which is located approximately 1.5 miles east of the alternative alignment, a majority of public recreation activities would likely take place outside of the construction impact areas. As discussed in Impact REC-1, a proposed temporary 230-kV transmission line would be constructed to run east-west, adjacent to the northern boundaries of the two preserve areas along Lambert Road, where CDFW manages the lands as an ecological reserve. There is no public access permitted within this part of the preserve. A RTM area would be built northwest of Mokelumne City, almost 1 mile east of the intermediate forebay. It would be nearly adjacent to the portion of the preserve run by The Nature Conservancy that lies south of Twin Cities Road and east of the Mokelumne River. Construction of the RTM area could cause noise and visual disturbances to this portion of the preserve for up to 6 years. A safe haven work area and temporary access road would be built northeast of Walnut Grove. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years. A tunnel would also run from the intermediate forebay, south through Staten Island in land managed by The Nature Conservancy. Tunnel construction would be underground and would not permanently displace any recreation facilities or lands within the preserve. No recreational opportunities would be permanently displaced, disrupted, or relocated by placement of the tunnel at this location. Staten Island, where a portion of Cosumnes River Preserve

is located and managed by The Nature Conservancy, is a popular birdwatching location. Table 15-15 and Mapbook Figure M15-4 identify the project features that would be constructed near or through preserve lands. Two safe haven work areas with temporary access roads, and two sets of tunnel shafts with temporary work areas and permanent access roads, would be built on Staten Island. The Staten Island portion of the preserve does not provide formal recreation facilities; however, visitors do access these areas along North Staten Island Road for wildlife viewing. During construction, access to the preserve along North Staten Island Road could be affected. Construction primarily would take place Monday through Friday, for up to 24 hours per day with dewatering 7 days per week and 24 hours per day. Construction noise and views could affect wildlife viewing and environmental education opportunities for docent-guided tours. Construction of the proposed water conveyance facilities would slightly reduce the amount of area available for wildlife viewing in Cosumnes River Preserve, resulting in a long-term reduction of recreation opportunities and experiences. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.9, mitigation would be available to address effects on nesting birds and waterfowl populations and greater sandhill crane near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Implementation of these conservation measures would increase wildlife viewing opportunities. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Wimpy's Marina

Wimpy's Marina is a private boating facility located on the south fork of the Mokelumne River southeast of Walnut Grove. It contains 22 berths and a ramp, along with RV sites, a bait shop, and public fishing access. The marina is within the noise and visual disturbance impact area, and is across the river from a tunnel corridor. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years. Access to the marina from West Walnut Grove Road will be maintained during geotechnical exploration and tunnel construction. On-water access to the marina and use of the marina's boating facilities would not be affected by geotechnical exploration or tunnel/pipeline construction activities. During construction it is possible that marina users would be disturbed by noise and visual disruptions related to the construction activities. Anglers on the river near the marina and across from the construction area would also potentially experience noise and visual disturbances from construction.

Delta Meadows

According to the California Department of Parks and Recreation website at the time of the Draft EIR/EIS was prepared, the Delta Meadows River Park is closed to the public and has no visitor services. It still serves as a preserve, and is a popular mooring site among boaters. This analysis describes the park as if it is accessible to recreationists. On-water access to the mooring site would not be affected. Permanent and temporary features of the proposed water conveyance facilities would cause ongoing noise and visual disturbances to visitors. The intermediate forebay and spillway are adjacent to the northern corner of Delta Meadows River Park, across Twin Cities Road.

Geotechnical exploration would also occur along the tunnel corridor for approximately 2.5 years. Construction primarily would take place Monday through Friday, for up to 24 hours per day. Construction noise, as well as operation and maintenance of the intermediate forebay and spillway, could adversely affect wildlife viewing and environmental education opportunities for potential visitors.

Bullfrog Landing Marina

Containing 43 berths, Bullfrog Landing Marina is on Middle River within the noise and visual disturbance impact area surrounding the tunnel/pipeline alignment across Bacon Island. A temporary access road would wrap around the southern and eastern sides of Bacon Island, and will be as close as approximately 900 feet to the marina. The marina is approximately 4,000 feet west of a safe haven work area used for tunnel construction, which is outside of the approximate 1,400-foot noise and visual buffer; therefore, noise and visual disturbances from the save haven work area are not expected to occur. On-water access to the marina and use of the marina's boating facilities would not be affected by tunnel construction activities. Boating opportunities would still be feasible at the marina during construction of the tunnel and use of the safe haven work area. During construction it is possible that marina users would be disturbed by noise and visual disruptions related to the temporary access road construction activities, which could last up to 11 years, resulting in a long-term adverse effect. Anglers on the river between the marina and the construction area would also experience noise and visual disturbances from construction.

Clifton Court Forebay

Clifton Court Forebay offers public fishing and hunting access from Lindeman Road on the south side of the forebay. There are no recreation facilities at the forebay; motorized boating, camping, and swimming are not allowed. Most fishing and hunting use at the forebay likely occurs along the west and south shores of the forebay, although some visitors walk or ride a bike around the forebay to reach other fishing and hunting locations. Visitors to these areas will experience a long-term reduction of recreational opportunities and experiences as a result of the proposed water conveyance facilities.

Access to the forebay would be maintained using Clifton Court Road or a detour. Construction of the combined pumping plants and associated facilities, Clifton Court Forebay expansion, control structures, shafts, work areas, reusable tunnel material areas, forebay dredging area, and installation of transmission lines would take up to 11 years. Geotechnical exploration would also occur along the tunnel corridor for approximately 2.5 years. Construction would primarily occur Monday through Friday for up to 24 hours per day. The opportunities for visitors who use the southern part of the forebay would be affected the most because of its proximity to the proposed construction areas. While the forebay is expanded and the new embankment is built, recreational visitors would lose access to the existing bank recreational activities. Construction would also cause noise and visual disturbances which would could deter fish and wildlife and result in reduced opportunities for fishing or hunting, as well as adversely affect the ambient recreation setting and recreation experience. Construction during waterfowl hunting season would affect recreational hunting in the area to the degree that use is temporarily degraded. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.9, mitigation would be available to address the effect on nesting birds and waterfowl populations near construction areas. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4,

Conservation Measures, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Lazy M Marina

Lazy M Marina provides about 35 berths, substantial dry storage, and a boat ramp. A permanent access road that would follow the same alignment as the existing Clifton Court Road would be located about 300 feet from this marina. It is anticipated that the existing road would be upgraded and extended, which could include widening the existing road, or resurfacing or reconstructing it to handle larger load volumes and weight. Construction, and equipment and delivery of Clifton Court Forebay and the combined pumping plants would occur up to 11 years.

Other Recreation Opportunities

On-Water Recreation

There are no recreation sites within the impact area for the operable barrier at the head of Old River and San Joaquin River. Although these facilities and other marinas or fishing sites fall outside of the construction impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of construction. Overall, construction activities associated with the proposed water conveyance facilities, and geotechnical exploration, would range from 2.5 years to up to 13.5 years depending on the site. Work would occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.9, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Construction of Alternative 4 intakes and water conveyance facilities would result in disruption to recreational opportunities. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction. Overall, construction and geotechnical exploration may occur year-round and last from 2.5 to 13.5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.9, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with

changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments, although this mitigation measure (TRANS-1c) would require cooperation from the affected jurisdictions, and therefore there is no way to guarantee its effectiveness.

Chapter 23, *Noise*, Section 23.3.3.9, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 4 intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round. A number of environmental commitments made by DWR would lessen these impacts (conduct environmental training for field management and construction personnel on important timing windows for covered species mating/nesting/fledging which would lessen some of the impacts on wildlife viewing; to store, process and reuse RTM in a way that would benefit recreational activities; provide and publicize alternative modes of access to affected recreation areas; implement a noise abatement plan) (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) as would AMM20 and AMM31. Due to the size of the Plan Area and the duration of construction, this impact would be significant. Mitigation measures would further reduce some construction-related impacts by implementing measures to protect or compensate for effects on existing recreation opportunities (Mitigation Measure REC-2); effects on wildlife habitat and species (Mitigation Measure BIO-75); minimize the extent of changes to the visual setting (Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4a), including nighttime light sources (Mitigation Measures AES-4b, AES-4c, and AES-4d); manage construction-related traffic (TRANS-1a, TRANS-1b, TRANS-1c); and implement noise reduction and complaint tracking measures (NOI-1a and NOI-1b). Mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could otherwise detract from the recreation experience. However, due to the dispersed effects on the recreation experience across the Delta, it is not certain that mitigation would reduce the level of these impacts to less than significant in all instances. Therefore, as a whole, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Construction-related impacts on informal fishing access sites near the proposed water conveyance facilities, such as along the east bank of the Sacramento River, in the vicinity of the proposed intakes, and in the vicinity of the expanded Clifton Court Forebay, would be considered significant because construction would alter the river bank and/or restrict access, making these sites unusable. To compensate for the loss of these informal sites during construction, the BDCP proponents will enhance nearby formal fishing access sites, including partnering with Yolo County to enhance the Clarksburg Fishing Access site on the west bank of the Sacramento River, and with the Sacramento County Department of Regional Parks to enhance the Cliffhouse Fishing Access site on the east bank of the Sacramento River and the Georgiana Slough Fishing Access site east of the Sacramento River, and with Contra Costa County to enhance fishing sites near Clifton Court Forebay, as well as other nearby sites. Prior to construction of the proposed intakes, the BDCP proponents will ensure adequate signage will be placed at the informal sites that would be directly affected by construction of the intakes,

directing anglers to the formal sites. Upgrading the existing fishing access sites will be completed prior to beginning construction of the intakes.

Where intake locations would remove existing public access to the Sacramento River for recreational purposes, as part of design of the intakes, the BDCP proponents will ensure that public access to the Sacramento River, including fishing access, will be incorporated into the design of the intakes. The access sites will be placed a reasonable distance from the intake to ensure the safety of recreationists and to compensate for the loss that would occur as a result of constructing the intakes.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to boat passage and navigation on the Sacramento River and other waterways in the study area, including direct effects on boat passage related to the creation of obstructions and associated boat traffic delays, would occur during construction of Alternative 4. Construction of the three intakes would involve installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment, which could affect navigation for recreationists. Construction of the temporary barge unloading facilities and siphons would also affect navigation for recreationists. Alternative 4 also would involve construction and operation of an operable barrier at the head of Old River (Mapbook Figure M15-4).

Intakes

To allow for construction of intakes, cofferdams would be constructed within the river channel. The cofferdams would vary in size according to intake location, but would range from 740 to 2,440 feet in length and would extend into the river channel up to 85 feet, depending on location. This would include a 25-foot buffer zone around each cofferdam. Although boats would be unable to use the portion of the waterway where construction was occurring, the river in the vicinity of the intake construction sites would remain open to boat passage at all times. The river is approximately 500–700 feet wide near the proposed intakes, which would leave most of the channel width (approximately 380–580 feet) open to boat passage, providing ample room for the boat traffic observed to occur in the area to pass without difficulty and minimizing possible traffic congestion.

Temporary in-water construction zone restrictions would be in place. These measures would include a speed-restricted zone extending upstream and downstream of river construction areas to reduce wake and maintain a safe work area in the vicinity of the construction activities. Site-specific safety features, including determination of the speed-restriction zone would be developed under the Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements and providing notification of construction activities in waterways. Within the speed-restricted zones around the intake areas, high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Mitigation Measure TRANS-1a also involves providing notification of construction activities in waterways to ensure information about construction site location(s), construction schedules, and identification of no-wake zone and/or detours is posted at Delta marinas and public launch ramps.

Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary reduced-speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, tubing, or fishing are also low, but effectively would be eliminated in the vicinity of the intakes for the duration of construction (up to 4 years at each intake location). However, implementation of separate, non-environmental commitments as set forth in Appendix 3B, *Environmental Commitments, AMMs, and*

CMs, relating to the enhancement of recreational access and control of aquatic weeds in the Delta would reduce these effects. Although there is sufficient width in the channel to allow boat passage, boaters could experience minor delays related to construction speed zones. However, this could still result in a reduction of recreational navigation opportunities would be considered adverse because, although temporary, the effects would be long-term, lasting more than 2 years.

Floating Fish Barriers

CM16 involves nonphysical fish barriers (BioAcoustic Fish Fences [BAFFs]) at the junction of channels with low survival of outmigrating juvenile salmonids to deter fish from entering these channels. In addition to these BAFF system evaluations of what may be considered true nonphysical barriers, studies are also underway to determine the effectiveness of a floating fish guidance structure. This structure uses steel panels suspended from floats to change water currents so that fish are guided towards the center of the river (away from other channel entrances), but does not substantially change the amount of water entering the channels. BAFF structures may be appropriate at the Georgiana Slough, Head of Old River, and Delta Cross Channel sites, while floating structures may be suitable at the Turner Cut and Columbia Cut sites. Installation of these barriers would not block boating access but would restrict the channels by extending into the channel by up to approximately 200 feet. Nonphysical barriers of the BAFF type would be removed and stored offsite while not in operation, but floating fish guidance structures do not require removal and would be left in place. This would cause impacts to boaters in these channels. Mitigation Measure TRANS-1a would be available to reduce impacts, but due to a potentially permanent duration, impacts would remain significant and unavoidable.

Siphons

Construction of the two siphons associated with Alternative 4 would not result in a long-term reduction in recreational navigation opportunities. However, temporary obstruction of boat passage may cause boat traffic delays or navigation hazards to boaters. The siphons would cross one existing water facility and one highway and rail line:

- South Clifton Court Forebay Outlet
- Byron Highway/Southern Pacific Railroad (SPRR)

The Byron Highway/SPRR siphon would not be built in an area where recreation occurs, so it would not cause a long-term reduction in recreational navigation opportunities.

The South Clifton Court Forebay Outlet siphon would lie underneath the existing Clifton Court Forebay outlet. This crossing is a constructed waterway that connects the existing Clifton Court Forebay to the Approach Canal to Banks Pumping Plant. It would not cause a long-term reduction in recreational navigation opportunities.

Culvert siphons would be constructed using cofferdams and open cut-and-cover construction methods with conventional cast-in-place concrete structures. In each phase, a temporary cofferdam surrounding the work area would be installed that would occupy as much as one-half the width of the waterway.

The culvert siphon at the South Clifton Court Forebay Outlet would be constructed in two phases, each phase lasting approximately one year. The first phase would entail the installation of a temporary cofferdam for half of the total length of the culvert siphon to be constructed inside the cofferdam. During the second phase, the cofferdam would be reinstalled across the other half of the

siphon, and the remainder of the structure would be constructed and backfilled. Construction of the cofferdams would occur from August to November.

Barges and Temporary Barge Unloading Facilities

Construction of the CM1 water conveyance facilities would require the use of barges in water, often to hold construction equipment, such as cranes. Construction would take place in phases, and the number and duration of barges would vary by location. Approximately eight barges are expected per day for construction of CM1 for up to 5 years. The majority of barge-related transportation would be used to carry precast tunnel segment liners to temporary barge unloading facilities closest to the launch shafts. Effects on recreation in the vicinity of the barges would be considered a long-term effect. Alternative 4 also includes seven barge unloading facilities to be built on or near the tunnel alignment at riverbank locations about 4–9 miles apart (Mapbook Figure M15-4). Temporary barge unloading facilities would be built on the following waterways: Snodgrass Slough, Potato Slough, San Joaquin River, Middle River, Connection Slough, Old River, and the West Canal. The temporary barge unloading facilities would be used to transfer construction equipment and materials to and from construction sites and would be removed after construction was completed.

Use of barges for water facilities construction and construction of the temporary barge unloading facilities may require partial channel closures and use of equipment within the waterways. Temporary in-water construction zone restrictions would be put in place around barges and barge facilities, including a speed-restricted zone extending upstream and downstream of construction within the waterway to reduce wake and maintain a safe work area in the vicinity of the construction activities. Site-specific safety features, including determination of the speed-restriction zone, and notification procedures would be developed under the Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Within the speed-restricted zones high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Specific effects that could occur at each barge unloading facility site are discussed below. Effects on recreation in the vicinity of the barge unloading facility sites would last approximately 5 years and would be considered a long-term effect. Construction would primarily occur Monday through Friday and last for up to 24 hours per day. In-river construction primarily would be limited to June 1 through October 31 each year. However, the barges would remain in place for the duration of the construction period and still present a temporary barrier to boats and related recreation. Post-construction, temporary barges would be removed and the ability to navigate rivers and channels would return to previous conditions.

Sacramento River

The Sacramento River barge unloading facility would be built almost 3 miles northeast of Walnut Grove on the Sacramento River, about 1,400 feet north of Twin Cities Road. It would be located at the southern end of a RTM area near the intermediate forebay. It would occupy approximately 200 feet of the river bank. The river channel is almost 200 feet wide at this location, and the barge unloading facility would require approximately 130 feet of the channel, leaving less than 100 feet for boat passageway. Increased boat traffic congestion could occur during peak use (primarily summer weekends) because boat traffic would be confined to a limited portion of the channel.

Snodgrass Slough

The Snodgrass Slough barge unloading facility would be located nearly adjacent to the Intermediate Forebay. It would occupy approximately 185 feet of the river bank and would extend about 135 feet into the river. The river channel is approximately 235 feet wide at this location, so it would leave about 100 feet for boat passage.

Little Potato Slough

The Little Potato Slough barge unloading facility would be on the southern end of Bouldin Island. It would occupy about 980 feet of riverbank, and would extend about 210 feet into the river. The channel is about 1,000 feet wide at this location, extending to an island, which would leave nearly 700 feet of passage for boats. Boats could also choose to bypass this facility and travel on the southern end of the island.

San Joaquin River

The San Joaquin River barge unloading facility would be on the south side of Venice Island, on a wide bend in the river, and would occupy about 928 feet of the riverbank. The river channel is more than 2,000 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain, and there would be little effect on boat passage.

Middle River

The Middle River barge unloading facility would be on the east side of Mandeville Island and would occupy approximately 180 feet of the riverbank. It would extend about 180 feet into the river, which is almost 900 feet wide at this location, leaving more than 700 feet for boat passage.

Connection Slough

The Connection Slough barge unloading facility would be on the north side of Bacon Island. It would occupy about 665 feet of riverbank and would extend about 250 feet into the river. There is an island in the middle of the channel, so it would leave about 150 feet for boat passage between the facility and the island, or boats could bypass it and travel on the northern side of the island.

Old River

One barge unloading facility would be on the northwest side of Victoria Island along the Old River, less than two miles from Discovery Bay. It would occupy more than 1,000 feet of the river banks near the junction of Woodward Canal, and would extend about 320 feet into the river. The river is about 520 feet wide at this location, which would leave almost 100 feet for boat passage. Peak boat traffic volume is likely high at this location; therefore, if boat passage continued, increased boat traffic congestion could occur during peak use (primarily summer weekends) because boat traffic would be confined to a limited portion of the channel. The Woodward Canal in the vicinity of the barge unloading facilities is a known location for waterskiing and wakeboarding.

West Canal

One barge unloading facility would be located on the northeast side of Clifton Court Forebay along West Canal, just south of Kings Island. It would occupy almost 1,000 feet of riverbank and would

extend about 80 feet into the channel. The channel is about 250 feet wide at this location, which would leave nearly 170 feet for boat passage.

Construction of the temporary barge unloading facilities would result in adverse effects to boat passage and navigation on waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Construction of the operable barrier at the head of Old River would have only short-term effects on recreational opportunities on Old River. The barrier would have a boat lock that would restore boating access once construction is complete.

Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including waterway navigation elements. Environmental commitments would also reduce effects on water-based recreation (water-skiing, wakeboarding, tubing).

Currently, invasive aquatic vegetation can limit access to boats and reduce swimming areas. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. BDCP would contribute funds to further the DBW's aquatic weed control programs in the Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*. Implementation of *CM13 Invasive Aquatic Vegetation Control* and the BDCP proponents' environmental commitment to fund programs for aquatic week control would create and rehabilitate alternative recreation opportunities for those eliminated during construction.

BDCP proponents would ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Additionally, BDCP proponents would commit to contributing funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Delta Plan R11. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Delta Plan R13. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. Potential areas for use of funds include, but are not limited to: the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding

House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta.

Nonetheless, since these effects would be long-term, lasting approximately 5 years, they would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes, temporary barge unloading facilities, siphons, and the operable barrier at the head of Old River. Impacts from intake and barge unloading facilities would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary partial channel closures could impede boat movement and restrict recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. DWR has made a commitment to partner with existing programs operating in the Delta to reduce expansion of the multiple species of invasive aquatic vegetation in the Delta which currently can limit access to boats and reduce swimming areas. BDCP would contribute funds to further the Department of Boating and Waterway's aquatic weed control programs in the Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, impacts from the intakes and barge unloading facilities would be long-term, and therefore considered significant and unavoidable. Construction of the operable barrier and the siphons would last for 2 years (short-term) and would not result in long-term reduction of recreation opportunities. The operable barrier at the Head of Old River will have a boat lock which will be in use whenever the barrier is completely or partially closed. Passage through the boat lock could take between 15-20 minutes depending on the water surface elevations. With implementation of Mitigation Measure TRANS-1a, these components would cause less-than-significant impacts on recreational navigation on Old River. Mitigation Measure TRANS-1a is available to reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed construction and barge operations in the waterways, but would not be able to completely mitigate the impacts on all the waterways. The impact would be significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Sport fishing in the study area is a year-round activity, and includes bank fishing and boat fishing for a number of fish including striped bass, largemouth bass; green and white sturgeon; Chinook salmon, and American shad. Striped bass, American shad, and largemouth bass are all sport fish species that were introduced into rivers for that purpose. Striped bass and largemouth bass are

regulated by CDFW for recreational fishing. Fishing likely occurs in all of the waterways where water intake and barge unloading facilities would be located.

Under Alternative 4, construction of the water intakes, siphons, and operable barrier, and placement and use of barge unloading facilities during tunnel/pipeline construction would result in temporary water quality effects (e.g., turbidity, accidental spills, disturbance of contaminated sediments); elevated underwater noise conditions (associated with pile driving and other construction activities); fish exposure to stranding and direct physical injury; and temporary exclusion or degradation of spawning and rearing habitats. These temporary construction-related effects would last for up to 5 years in the vicinity of intake and barge unloading facilities and could alter fish populations such that recreational fishing opportunities in the study area would be affected. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Construction of the expanded Clifton Court Forebay would affect bank fishing but would not affect fish-accessible waterways or on-water sport fishing. Construction of the forebay would cause a long-term reduction of up to 5 years for bank fishing that occurs on the embankment on the southern end of Clifton Court Forebay while the forebay is expanded and a new embankment is constructed. Construction of the combined pumping plants on the northeast side of Clifton Court Forebay, and geotechnical exploration, would last up to 13 years. Fishing would be permitted again once construction is completed. However, this would result in a long-term reduction of fishing opportunities. Mitigation Measure REC-2 would address these effects by ensuring access to nearby fishing by enhancing formal fishing sites near the proposed water conveyance facilities, including near Clifton Court Forebay, and providing adequate signage directing anglers to the formal sites.

Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers near construction areas. Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 11 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measure AQUA-1a and AQUA-1bwould avoid and minimize adverse effects on sport fish populations from impact pile driving, Mitigation Measures NOI-1a and NOI-1b and an environmental commitment to develop and implement a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c) (as discussed in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best

management practices to implement a project landscaping plan (AES-1g). As described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Anglers could move to other locations along the Sacramento River and throughout the Delta region. Due to the magnitude of the Plan Area and the duration of time construction is expected to last, this effect would be adverse. However, mitigation measures are available to reduce impacts by ensuring access to and enhancing nearby fishing sites, and to address noise and visual disturbances. Therefore, with implementation of mitigation measures, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. The effect would not be adverse.

***CEQA Conclusion*:** Significant impacts could occur if construction of the water conveyance facilities resulted in a long-term reduction of recreational fishing opportunities. Construction of the water intakes, siphons, and operable barrier, and placement and use of barge unloading facilities during tunnel/pipeline construction would result in temporary water quality effects, elevated underwater noise conditions, fish exposure to stranding and direct physical injury, and temporary exclusion or degradation of spawning and rearing habitats. DWR has made a commitment to prevent water quality effects through environmental training; implement stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; dispose of spoils, RTM, and dredged material (RTM would be removed from RTM storage areas and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material); implement a noise abatement plan; and implement a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Due to the magnitude of the Plan Area and the duration of time construction is expected to last, this impact would be significant. However, Mitigation Measures AQUA-1a and AQUA-1b would avoid and minimize adverse effects on sport fish populations from impact pile driving (Mitigation Measures AQUA-1a, NOI-1a, NOI-1b) and ensure continued access for bank fishing at established locations as well as enhance fishing sites near the proposed water conveyance facilities, including near Clifton Court Forebay; and provide adequate signage directing anglers to the formal sites (Mitigation Measure REC-2). Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). With implementation of these mitigation measures, this impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 4 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9, they are typically limited to specific rivers and not the population of that species as a whole.

Species frequently targeted in recreational fishing include Chinook salmon, steelhead, white sturgeon, and striped bass. As described in Impact AQUA-39 through Impact AQUA-60, AQUA-93 through AQUA-96, AQUA-147 through AQUA-150, and AQUA-201 to AQUA-204 in Chapter 11, impacts from operations of the water conveyance facilities related to entrainment, spawning and egg incubation habitat, rearing habitat, and migration conditions generally would be less than significant or beneficial to Chinook salmon, steelhead, white sturgeon, and striped bass. However, entrainment of striped bass early life stages at the NDD was concluded, with some uncertainty, to be significant and adverse (Impact AQUA-201). As described in that analysis, effects on early life stages do not necessarily translate into effects on adults (Grimaldo et al. 2009; Baxter et al. 2010).

Impacts from operations of the proposed water conveyance facilities related to common recreational fish populations are less than significant. Although impacts may occur, they would be localized and not affect the species as a whole, or would be to early life stages and would not necessarily transfer into effects on the later life stages, and therefore would not be anticipated to amount to a reduction in fishing opportunities. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 4 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall. As described in Chapter 11, impacts from operations of the water conveyance facilities related to entrainment, spawning and egg incubation habitat, rearing habitat, and migration conditions generally would be less than significant or beneficial to Chinook salmon, steelhead, white sturgeon, and striped bass. Although impacts may occur, they would be localized and not affect the species as a whole, or would apply to early life stages without necessarily transferring to adults, and therefore would not be anticipated to amount to a reduction in fishing opportunities. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Generally, the peak recreation season at the reservoirs falls between May to September. Reservoirs are usually at maximum storage volume and surface water elevation in May and decline over the course of the summer through September. This analysis compares the results of the CALSIM II end-of-September reservoir water surface elevations because typically this month has the most instances when reservoir elevations fall below key recreation thresholds (i.e., number of years out of the 82 simulated when the September end-of-month storage is less than the recreation elevation threshold). Under these low surface water elevations, the overall usable reservoir area is reduced and previously submerged islands or shoals may become exposed and affect boating safety. In addition, shoreline recreation becomes degraded.

For each reservoir, a specific water surface level elevation was selected as the "recreation threshold," an initial indicator to represent constrained boating conditions for the comparison of the BDCP action alternative conditions to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). Additional consideration of other factors is discussed, for instance where the modeling results show substantial changes to reservoir levels that may affect recreation at a particular location (generally, this occurs for San Luis Reservoir). Also see Chapter 3, *Description of Alternatives,* Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 4 (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 4 Operational Scenarios H1, H2, H3, and H4 recreation thresholds would be exceeded more frequently at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs relative to Existing Conditions. These changes represent a greater than 10% increase in the frequency the recreation thresholds are exceeded. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 4 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 4 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 4.

No Action Alternative (2060) Compared to Alternative 4 (2060)

The comparison of Alternative 4 (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Table 15-12a and Table 15-12b, Alternative 4 Operational Scenarios H1, H2, H3, and H4 would result in changes in the frequency with which the end-of-September reservoir levels at Trinity Shasta, Oroville, Folsom New Melones and San Luis Reservoirs would fall below levels identified as important water-dependent recreation thresholds. With the exception of San Luis Reservoir, the CALSIM II modeling results

indicate that reservoir levels under Alternative 4 operations would either not change or would fall below the individual reservoir recreation thresholds less frequently than under No Action Alternative (2060) conditions. Operation of Alternative 4 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 4 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling results for San Luis Reservoir indicates there could be up to 11, 38, 28, and 46 additional years under Alternative 4 Scenario H1, H2, H3, and H4, respectively during which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. In addition, at the Basalt boat launch, which is accessible to elevation 340 feet, operations under Alternative 4 Scenarios H2 and H4 would result in 15 and 29 additional years during which reservoir elevations would fall below the recreation threshold relative to the No Action Alternative (2060) condition. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at San Luis Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. The reduction in surface elevations at San Luis Reservoir under Scenarios H1 and H2 and H4 would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 1A (2060) operations would either not change (New Melones Reservoir) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake, because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these effects would be considered beneficial effects on recreation opportunities and experiences. Operation of Alternative 4 would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, although boating opportunities would be reduced more frequently for the Dinosaur Point boat launch and the Basalt boat launch would not substantially change. The reduction in reservoir access by boaters under Scenarios H2 and H4 would be significant because it is a greater than 10% change (8 additional years or more). Operations as modeled under Alternative 4 Scenarios H2 and H4 could substantially affect recreational boating at San Luis Reservoir and could result in a significant impact. Mitigation Measure REC-6 would reduce this impact to a less-than-significant level.

Mitigation Measure REC-6: Provide an Alternative Boat Launch to Ensure Access to San Luis Reservoir

Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Intake maintenance, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment could have a minor effect on boat passage and navigation in the Sacramento River. Repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reduce opportunities for waterskiing, wakeboarding, or tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment and these effects would be expected to be short-term (2 years or less). In addition, the areas around the proposed intake locations are not usually used for waterskiing, wakeboarding, or tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in periodic temporary but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Conveyance facility maintenance may include painting, landscaping, equipment replacement, and mechanical repairs that would be short-term and intermittent and would not affect recreation opportunities. Maintenance activities for these facilities would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 4 could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. CM2 would reduce migratory delays and loss of adult salmon, steelhead, and sturgeon at Fremont Weir and other structures; enhance rearing habitat for Sacramento River Basin salmonids; enhance spawning and rearing habitat for Sacramento splittail; and improve food sources for delta smelt downstream of the bypass. To achieve this, CM2 includes modifications to the Yolo Bypass that, in balance with existing uses, would benefit covered fish by increasing the frequency, duration, and magnitude of floodplain inundation and improving fish passage.

Yolo Bypass fishery enhancement would be achieved with site-specific projects to construct fish passage improvements and facilities to introduce and manage additional flows for seasonal floodplain habitat. Prior to construction for each project, the preparatory actions would include interagency coordination, feasibility evaluations, site or easement acquisition, modifications to agricultural practices, development of site-specific plans, and environmental compliance.

The YBFEP would propose a balance between important uses of the Yolo Bypass such as flood protection, agriculture, endangered terrestrial species habitat, fisheries habitat, the Yolo Natural Heritage Program, and managed wetlands habitat as described in existing state and federal land management plans associated with the Yolo Bypass Wildlife Area and existing conservation easements on private land.

Noise and the physical footprint associated with these physical modifications would temporarily affect the quality and access of fishing opportunities in the affected areas. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This modification in operations would affect onshore fishing opportunities. Shore fishing would be temporarily affected by reduced access to the popular deeper channels due to an increased floodplain footprint in the Yolo Bypass Wildlife Area. This conservation measure was designed, in part, to improve habitat for covered fish species, including Chinook salmon, green and white sturgeon, and steelhead. These habitat improvement elements would lead to increased populations of targeted fish species, which over time, could benefit

recreational fishing opportunities. Thus, to the extent that access is available to anglers, the fishing experience for native sport species benefiting from this measure would improve based on hypothetical higher catch rates. Environmental commitments would be available to reduce the effects of inundation on fishing opportunities.

CM4 would provide for the restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Tidal habitat restoration activities would lead to temporary decreases in boat and onshore fishing opportunities and quality due to the physical footprint, noise, odors, and other conditions created by site preparation and earthwork activities, including channel and bank modification in restoration areas. Tidal habitat restoration could permanently disrupt existing points of fishing access, eliminating recreational opportunities. Depending on the extent of recreational access granted to the public in new tidal habitat areas, however, this measure could also support expanded opportunity for shore-based and boat fishing. This conservation measure was designed, in part, to improve habitat for covered fish species, including Chinook salmon, green and white sturgeon, river and Pacific lamprey, and steelhead. CM4 would improve fish habitat which would be expected to lead to increased populations of targeted fish species, which over time, would benefit fishing experience associated with these and other target species that benefit from restored tidal habitat.

Another guiding principle in the design of CM4 is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. Predator removal measures would be highly localized and would not appreciably decrease Delta-wide abundance of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9). The recreational experience associated with fishing for these species would not be expected to be substantially reduced. On balance, it is anticipated that CM4 would have a minor positive effect on the fishing experience in the Delta region.

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle Rivers channels. While temporary earthwork and site preparation measures could temporarily limit recreational access and interfere with the quality of fishing in restoration areas, this measure would result in an increase in boat fishing opportunities as a result of improvements in riparian habitat for a number of fish species and increased areas for boat navigation. Similar improvements may also exist for onshore fishing, though current points of access may be eliminated following implementation of restoration activities.

Within the first 40 years of Plan implementation, a total of 10,000 acres of seasonally inundated floodplain would be restored under Alternative 4. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. These restoration

measures would result in a further increase in onshore and boat fishing opportunities due to improvements in riparian habitat for fish; however, existing points of access may be modified or disrupted.

CM6 would create benches on the outboard side of levees or create setback levees. Site preparation and earthwork associated with the construction of these areas and potential access restrictions would lead to temporary or permanent decreases in boat and onshore fishing quality and opportunities. However, CM6 was designed, in part, to improve habitat for covered fish species, including Chinook salmon, sturgeon, and steelhead. CM6 would improve the fishing experience associated with these and other target species that benefit from enhanced channel margin habitat. Another guiding principle in the design of this measure is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. The recreational experience associated with fishing for these species would be reduced by this measure. After 20 years of implementation, the BDCP would cumulatively enhance 10 miles of channel margin habitat. After 30 years, this measure would cumulatively enhance 20 miles of channel margin. This measure would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. On balance, it is anticipated that because of these habitat improvements and expected increase in targeted fish populations, this measure would make a minor improvement to the fishing experience in the Delta region.

CM7 would restore 1,100 acres of riparian habitat in the first 15 years and up to 5,000 acres in the late long-term. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with CM4, CM5, and CM6. Restoration of riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic (SRA) cover. By year 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. While construction activities associated with this component may temporarily or permanently restrict some access for anglers and create temporary conditions less favorable for fishing activities, this measure would improve fish habitat, which would be expected to result in higher populations of targeted species and lead to an enhanced fishing experience.

Under CM11 management plans for natural communities may be prepared for specific reserves or for multiple reserves within a specified geographic area. Management and enhancement actions would be implemented for the following natural communities: tidal aquatic and wetland, nontidal aquatic and wetland, riparian, grasslands and associated seasonal wetland, inland dune scrub, and agricultural lands and managed wetlands. Depending on the level of recreational access granted by management plans, this measure could increase or decrease opportunities for anglers within the Delta region.

CM12 would minimize adverse effects of methylmercury on covered fish species, including white sturgeon and North American green sturgeon, and Sacramento splittail. This measure, if successful in reducing predation caused as a byproduct of methylmercury and improving fish health, would support an enhanced fishing experience for onshore and boat-based anglers.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. Site-specific conditions and the intended goal would dictate the specific method of removal. This measure is hypothesized to reduce predation mortality on covered species (juvenile salmon, steelhead, and splittail) by reducing habitat for nonnative predatory fish and by increasing turbidity

levels. Increased turbidity could also support delta and longfin smelt foraging. Control of nonnative aquatic vegetation could also support access to additional rearing habitat for covered species, as well as increased food availability stemming from greater light levels for phytoplankton growth. Operations associated with vegetation control, particularly mechanical removal, would intermittently and temporarily affect the quality of fishing. However, this measure would increase opportunities for onshore and boat fishing for species that are hampered by the presence of excessive nonnative vegetation. While these activities would reduce the fishing experience related to nonnative predatory fish, overall these efforts would not appreciably reduce Delta-wide abundances of predatory game fish (i.e., largemouth bass, striped bass) and populations would not be diminished to the extent that fishing opportunities would be adversely affected (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9).

CM14 would maintain dissolved oxygen (DO) levels above levels that impair covered fish species in the Stockton Deep Water Ship Channel when covered species are present. The BDCP would operate and maintain an oxygen aeration facility in the Stockton Deep Water Ship Channel to increase DO concentrations. By improving conditions for covered and game fish species, this measure would increase opportunities for onshore and boat fishing activities.

CM15 would reduce local effects of predators on covered fished species by conducting predator control in areas with high predator density. Predator *hot spots* would be identified and control methods would be adopted including the removal of predator hiding spots, modification of channel geometry, targeted removal of predators, and other focused methods as dictated by site-specific conditions and the intended outcome or goal. Preference for which hot spots to address would be given to areas of high overlap with covered fish species, such as migratory routes or spawning and rearing habitats. Predator control would decrease opportunities for onshore and boat fishing for species targeted for removal but would improve fishing opportunities for game species benefiting from reduced predation. If implementation includes a relaxation of regulations relating to bag limits or size restrictions associated with predatory species, this measure would carry a beneficial effect for anglers targeting these species as well. Overall, as for other CMs targeting predator species, these efforts would not appreciably reduce Delta-wide abundances of predatory game fish such that recreational fishing would be adversely affected (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9).

CM16 involves nonphysical fish barriers (BioAcoustic Fish Fences [BAFFs]) at the junction of channels with low survival of outmigrating juvenile salmonids to deter fish from entering these channels. Nonphysical fish barrier placement locations would include Georgiana Slough, the head of Old River, the Delta Cross Channel, Turner Cut and Columbia Cut (note that Turner and Columbia Cut each have two channels, and thus would require two barriers). Installation of these barriers could temporarily limit fishing activities by creating noise and necessitating a physical footprint in existing fishing areas. This measure would decrease opportunities for onshore and boat fishing in some channels but would support overall native fish populations, resulting in a mixed, but minimal, effect on fishing opportunities across the Delta region.

To address the illegal harvest of covered species across the study area, under CM17, the BDCP Implementation Office would contribute funds directly to the CDFW Delta-Bay Enhanced Enforcement Program to hire and equip additional staff to improve enforcement against poaching of covered species. The program currently has a 10-warden squad; the BDCP would provide funds to hire and equip 23 additional staff, including 17 game wardens and 6 supervisory and administrative staff, to increase enforcement of fishing regulations. While this measure would curb illegal fishing

activities and could result in greater regulatory burdens for law-abiding anglers as a result of increased inspection frequency, it would increase opportunities for a wider number of individuals through the enforcement of bag limits.

CM18 would establish new conservation propagation programs and expand the existing program for delta and longfin smelt. This measure would include development of a delta and longfin smelt conservation hatchery by USFWS. The specifications and operations of this facility have not been developed. The final selection of a location for the facility will involve additional environmental review. The location is expected to be within the study area in the vicinity of Rio Vista. The BDCP identifies potential USFWS conservation hatchery facility locations in this area (see Figure 3.4-20 in BDCP Chapter 3, *Conservation Strategy*). One site is northwest of the city limits and could be used for a supplementation production facility. This site is not near any existing well-established recreation sites or opportunities and is approximately 1 mile from the Sacramento River such that future construction and operation activities would not be expected to affect water-based recreation opportunities and experiences. The other site is a former Army Reserve base on the west river bank, south of the city limits, that would be developed as a genetic refuge and research facility. Construction at this site could affect recreation activities and experiences at the Delta Marina Yacht Harbor, immediately north of the site, and boating (including boat fishing) on the Sacramento River, depending on noise levels and the degree of visual disturbances. Additional permitting and environmental documentation would be needed to implement this conservation measure once facility designs and funding are available. Overall, implementation of CM18 would not be expected to have an adverse effect on fishing opportunities because construction of the facility would be anticipated to last 2 years or less (short term) and operation of the facility would not be expected to affect recreational fishing.

Under CM19, the BDCP Implementation Office would provide a mechanism for implementing stormwater treatment measures that would result in decreased discharge of contaminants to the Delta. These measures would be focused on urban areas and would fund local government projects to reduce pollutant discharges in stormwater. This conservation measure is intended to reduce the amount of pollution in stormwater runoff entering Delta waterways. These efforts would benefit aquatic species, including sport fish populations, in the study area. There would be no adverse effect on recreational fishing.

Under CM20, the BDCP Implementation Office would fund a Delta Recreational Users Invasive Species Program designed to implement actions to prevent the introduction of new aquatic invasive species and reduce the spread of existing aquatic invasive species via recreational watercraft, trailers, and other mobile recreational equipment used in aquatic environments in the study area. The program would consist of two primary elements targeting recreational boaters: education and outreach, and watercraft inspection. Education and outreach printed materials and interpretive displays would provide information regarding the presence and range of existing aquatic invasive species, the various vectors of aquatic invasive species, the threat of existing aquatic invasive species spreading within the study area, and the risk of new aquatic invasive species introductions. The watercraft inspection would involve development and implementation of a comprehensive inspection program. This type of program involves screening interviews at the point of entry; a comprehensive inspection of all high risk watercraft, trailers, and equipment identified as high-risk during the screening interview; decontamination and/or quarantine or exclusion of watercraft, trailers, and equipment that are not clean, drained, and dry; and optional vessel certification. These efforts would benefit aquatic species, including sport fish populations, in the study area. Although

there could be a marginal effect on the recreation experience if boaters are delayed at the boat launch, it is expected that there would be no adverse effect on recreational fishing.

Under CM21, the BDCP proponents would provide funding for actions that would minimize the potential for entrainment of covered fish associated with operation of nonproject diversions and also to improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources into nonproject diversions, thereby benefiting all covered fishes. The number and size of the diversions that would be eliminated are not precisely known because the affected parcels have not yet been identified and moreover, some existing diversions may be remediated before being incorporated into the BDCP preserve system. Unscreened diversions may be handled through removal of individual diversions that have relatively large effects on covered fish species; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions with substantial effects on covered species from high quality to lower quality habitat, in conjunction with screening; reconfiguration and screening of individual diversions in high quality habitat to take advantage of small-scale distribution patterns and behavior of covered fish species relative to the location of individual diversions in the channel; voluntary alteration of the daily and seasonal timing of diversion operation; or other methods may be implemented if the technical team determines it to be appropriate. Implementation of this measure would likely involve some in-water construction at some sites. These activities would be highly localized and of short duration and would not be expected to result in adverse effects on recreational fishing in the study area. Mitigation measures and environmental commitments would be available to reduce the effects of construction on recreation opportunities and experiences in the study area.

During the implementation stage, construction activity associated with conservation measures could result in adverse effects on recreation by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. The conservation measures are expected to result in a long-term beneficial effect on recreation by enhancing aquatic habitat and fish abundance in the study area.

***CEQA Conclusion*:** Significant impacts could occur from implementation of CMs 2-21 if it resulted in a long-term reduction in fishing opportunities. During the implementation stage, CM2-CM21 could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat.

CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*).

CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). DWR has also made environmental commitments to prevent water

quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B).

Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level.

In addition, a number of mitigation measures already being implemented to mitigate effects of construction of CM1 will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.9). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.9). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.9).

Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Therefore, the potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant. CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** This assessment evaluates BDCP conservation measures related to habitat restoration and enhancement efforts and those designed to reduce other stressors, describing their potential effects on boating recreation in the study area. Because the details surrounding the location and implementation of many of these measures are under development, these topics are addressed at a programmatic level. CM17, Illegal Harvest Reduction, is an enforcement funding measure; CM19, Urban Stormwater Treatment, would reduce pollutant discharges in stormwater—these measures would not affect recreational boating opportunities and are not discussed in this analysis.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. Boats are not allowed in the Yolo

Bypass Wildlife Area, so there would be no effect on boating opportunities due to construction activities associated with the physical modifications for this measure. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This measure would not affect opportunities for boating-related activities as a result of longer inundation periods.

CM4 provides for the restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. In the early long-term, BDCP implementation would provide for the cumulative restoration of 25,975 acres of freshwater and brackish tidal habitat in the BDCP ROAs under all the action alternatives. In the late long-term, a cumulative 65,000 acres of freshwater and brackish tidal habitat throughout the ROAs would be restored. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. CM4 would lead to temporary decreases in boat-related recreation opportunities as a result of noise and other conditions associated with channel and bank modification activities in restoration areas. Following completion of restoration, CM4 would support expanded opportunities for boating in reconnected and dredged sloughs.

CM5 provides for restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle Rivers channels. These locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. While site preparation and earthwork activities associated with restoration may temporarily limit some boating access and lead to degraded conditions resulting from noise, odors, or visual effects, CM5 would result in an increase in boat-related recreation opportunities as a result of the seasonal expansion of navigable areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. At least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. CM6 would create benches on the outboard side of levees or create setback levees. Construction effects including noise, odors, and deteriorated visual conditions would temporarily alter the quality of the boating experience in enhancement areas. Where construction and completion of new benches would extend into existing waterways, navigable areas would be slightly reduced, which would permanently affect boating-related recreation. However, in cases where setback levees are constructed and channels are expanded, there would be a slight increase in boating opportunities.

CM11 would provide beneficial effects on boating opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would update one boating facility, as well as a

new boat launch facility within the footprint of the North Delta diversion facilities, which would increase opportunities for boating within the study area.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. While aquatic vegetation removal operations could temporarily restrict or obstruct navigation and reduce the quality of boating, overall the measure would increase boat passage and navigation and would improve the boating experience.

Under CM16, nonphysical fish barriers would be placed at the head of Old River, the Delta Cross Channel, and Georgiana Slough, Turner Cut and Columbia Cut (note that Turner and Columbia Cut each have two channels, and thus would require two barriers). Depending on their design, the construction and operation of these barriers could constrict boat passage or necessitate lower speed limits, diminishing the boating experience around the barriers.

Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

CM18 would establish new conservation propagation programs and expand the existing program for delta and longfin smelt. This measure would include development of a delta and longfin smelt conservation hatchery by USFWS. The specifications and operations of this facility have not been developed. The final selection of a location for the facility will involve additional environmental review. The location is expected to be within the study area in the vicinity of Rio Vista. The BDCP identifies potential USFWS conservation hatchery facility locations in this area (see Figure 3.4-20 in BDCP Chapter 3, *Conservation Strategy*). One site is northwest of the city limits and could be used for a supplementation production facility. This site is not near any existing well-established recreation sites or opportunities and is approximately 1 mile from the Sacramento River such that future construction and operation activities would not be expected to affect water-based recreation opportunities and experiences. The other site is a former Army Reserve base on the west river bank, south of the city limits, that would be developed as a genetic refuge and research facility. Construction at this site could affect recreation activities and experiences at the Delta Marina Yacht Harbor, immediately north of the site, and boating on the Sacramento River, depending on noise levels and the degree of visual disturbances. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c will address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.9). Mitigation Measures NOI-1a and NOI-1b will address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.9). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts

related to a long-term reduction in boating-related recreation activities to a less-than–significant level. Overall, implementation of CM18 would not be expected to have an adverse effect on recreational boating opportunities.

Under CM20, the BDCP Implementation Office would fund a Delta Recreational Users Invasive Species Program designed to implement actions to prevent the introduction of new aquatic invasive species and reduce the spread of existing aquatic invasive species via recreational watercraft, trailers, and other mobile recreational equipment used in aquatic environments in the study area. The program would consist of two primary elements targeting recreational boaters: education and outreach, and watercraft inspection. Education and outreach printed materials and interpretive displays would provide information regarding the presence and range of existing aquatic invasive species, the various vectors of aquatic invasive species, the threat of existing aquatic invasive species spreading within the study area, and the risk of new aquatic invasive species introductions. The watercraft inspection would involve development and implementation of a comprehensive inspection program. This type of program involves screening interviews at the point of entry; a comprehensive inspection of all high risk watercraft, trailers, and equipment identified as high-risk during the screening interview; decontamination and/or quarantine or exclusion of watercraft, trailers, and equipment that are not clean, drained, and dry; and optional vessel certification. Although there could be a marginal effect on the recreation experience if boaters are delayed at the boat launch, it is expected that there would be no adverse effect on recreational boating.

Under CM21, the BDCP proponents would provide funding for actions that would minimize the potential for entrainment of covered fish associated with operation of nonproject diversions and also to improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources into nonproject diversions, thereby benefiting all covered fishes. The number and size of the diversions that would be eliminated are not precisely known because the affected parcels have not yet been identified and moreover, some existing diversions may be remediated before being incorporated into the BDCP preserve system. Unscreened diversions may be handled through removal of individual diversions that have relatively large effects on covered fish species; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions with substantial effects on covered species from high quality to lower quality habitat, in conjunction with screening; reconfiguration and screening of individual diversions in high quality habitat to take advantage of small-scale distribution patterns and behavior of covered fish species relative to the location of individual diversions in the channel; voluntary alteration of the daily and seasonal timing of diversion operation; or other methods may be implemented if the technical team determines it to be appropriate. Implementation of this measure would likely involve some in-water construction at some sites. These activities would be highly localized and of short duration and would not result in adverse effects on recreational boating in the study area.

With the exception of CM 18, these measures would not result in a long-term reduction in boating-related recreation activities. With mitigation implemented, CM 18 would result not be adverse. Overall, this impact would not be adverse.

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Overall, these measures would not be anticipated to result in a long-term reduction in boating-related recreation activities; therefore, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. However, construction of CM18 would result in significant impacts. A number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c would address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.9). Mitigation Measures NOI-1a and NOI-1b would address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.9). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts related to a long-term reduction in boating-related recreation activities to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** This section considers upland recreational activities and potential effects from BDCP conservation measures geared toward the restoration and enhancement of habitat and the reduction of stressors on covered species. The activities under consideration include hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. The specific location and implementation activities associated with these measures are pending; thus, these topics are addressed at a programmatic level. Future guidelines governing the level of recreational access allowed in restored habitat areas would influence the severity of the BDCP's effects on these activities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

Under CM2, the Yolo Bypass would be modified to increase the frequency, duration, and magnitude of floodplain inundation. These actions would improve passage and habitat for Sacramento splittail, Chinook salmon, lamprey, and possibly steelhead. The modifications, which include fish passage improvements and flow management facilities, would be implemented in four phases starting with plan implementation and continuing to approximately 2063. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. The Yolo Bypass Wildlife Area provides opportunities for upland recreational activities, including waterfowl and upland game bird hunting, hiking and walking, wildlife viewing, botanical viewing, and nature photography. Changes to flood management in the Yolo Bypass have the potential to result in effects on waterfowl and other recreation uses, including recreational hunting, in this area (Ducks Unlimited 2012). Because the wildlife area closes during periods of inundation, this measure would decrease opportunities for these activities as a result of the longer inundation periods in the Yolo Bypass. Under Existing Conditions, flood-related conditions contribute to Yolo Bypass hunting area closures lasting for up to 2 weeks (14 days) out of the 100-day hunting season. Removal of berms and levees could also decrease recreational access in the Yolo Bypass. Construction activities would also temporarily affect the quality of activities by introducing noise, odors, and unattractive visual scenes into the recreational environment. Longer inundation events would reduce wetland-dependent wildlife species access to food and could result in impacts to upland game birds and failure of nesting birds during spring events. This may decrease hunting and wildlife viewing experiences during non-flooding periods. Winter flood water levels under CM2 could be deeper than Existing Conditions waterfowl species (e.g., dabbling duck) that

prefer a shallower flooded seasonal wetland area could experience reduced foraging habitat. Another factor that could affect waterfowl populations and related waterfowl hunting and bird watching would be spring seed production loss and related decrease of food resources for these populations (Ducks Unlimited 2012). Hunting in the Yolo Bypass is most common in the lower elevation portions of the property; thus, low levels of flooding would impact blind areas and free roam areas and reduce hunting opportunities. As described in Table 3.4.2-1 of Chapter 3 of the BDCP, two inundation targets have been proposed for CM2, which would attempt to inundate 7,000-10,000 acres from November to May, or 17,000 acres from December through February, every year for 50 years, which could have potential effects on waterfowl and associated recreational opportunities. The hunting season for waterfowl lasts from late October through January, so some months would not be affected by inundation. However, CM2 would still have an adverse effect on upland recreational opportunities. The BDCP proponents and agencies are considering alternative methods for managing closures at the wildlife area, such as partial rather than full closures following flood events, and so it could be that future operations would not adversely affect the overall hunting season. Additionally, environmental commitments are available to reduce the effects of inundation on upland recreational opportunities.

CM3 provides the mechanism and guidance for land acquisition and establishment of a system of conservation lands in the study area necessary to meet BDCP natural community and species habitat protection objectives. This system of conservation lands would be built over the implementation term of the BDCP to protect and enhance areas of existing natural communities and covered species habitat, protect and maintain years of selected plant species with very limited distributions, provide sites suitable for restoration of natural communities and covered species habitat, and provide habitat connectivity among the various BDCP conservation land units in the system. This measure includes tidal habitat restored under CM4; valley/foothill riparian habitat restored under CM7; grassland habitat restored under CM8; 8,000 acres of grassland habitat protected, vernal pool complex restored to achieve no net loss under CM9; 600 additional acres vernal pool complex protected, nontidal freshwater perennial emergent wetland and nontidal perennial aquatic habitat restored under CM10; 400 acres of alkali seasonal wetland complex protected and 16,620–32,640 acres of agricultural habitats protected. Depending on the acquisition strategy implemented through this measure, recreational access for upland activities could be expanded or diminished. Mechanisms that permit public access would increase opportunities related to upland hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. Alternatively, acquisition that would exclude public recreational use would decrease opportunities for these activities.

CM4 provides for restoration of 16,300 acres of tidal habitat (brackish emergent wetland, freshwater emergent wetland, perennial aquatic, other wetland, and adjacent upland [to accommodate sea level rise]) in the near-term and up to 65,000 acres in the late long-term. In the late long-term, BDCP implementation would provide for the cumulative restoration of 65,000 acres of freshwater and brackish tidal habitat in the BDCP ROAs under Alternative 1A. The extent of restored tidal habitat includes shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Site preparation and earthwork associated with this restoration could result in temporary closure to recreational areas and excess noise, decreasing recreational quality. Additionally, some upland areas would be converted to tidal habitat as part of

this measure, limiting access for upland recreation activities including upland hiking and walking, camping, picnicking, and nature viewing and photography. However, because transitional upland habitat adjoining tidal areas would also be restored, this could also create new opportunities. Furthermore, restoration actions adjacent to existing recreational areas could enhance the quality of the experience in these areas.

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the early long-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle River channels; these locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. Levee removal and construction would temporarily limit access, while increased inundation of formerly upland areas would temporarily and permanently limit access, diminishing opportunities for a range of upland recreational activities including upland hiking, walking, camping, picnicking, upland game hunting, sightseeing, wildlife and botanical viewing, and nature photography. Noise, odors, and visual degradation from construction would also temporarily affect upland recreational quality. However, restoration under this measure would provide additional on-water waterfowl hunting opportunities and improve the quality of recreational experiences in existing and adjacent recreation areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. Under CM6 at least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. At least 5 of the 20 miles of channel margin enhancement would take place along the Sacramento River and at least 5 miles would be along the San Joaquin River. The remaining 10 miles would be distributed among other fish migration channels. Earthwork and site preparation associated with habitat enhancement may limit access to existing upland recreational areas and degrade the recreational experience. This measure would create benches on the outboard side of levees or create setback levees. Where setback levees and associated enhancement activities close access to existing upland areas, associated recreational opportunities such as wildlife viewing and hiking would be reduced. Where habitat enhancement creates new upland areas accessible to recreationists, the opportunities for upland activities would improve. In either case, habitat enhancements would improve the experience of wildlife-dependent upland recreational activities from existing, adjacent recreation areas.

CM7 would restore 1,100 acres of riparian habitat in the first 15 years and up to 5,000 acres in the late long-term. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with CM4, CM5, and CM6. By year 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. Restoration of riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic cover. While construction activities and access restrictions associated with this component may temporarily or permanently reduce opportunities for or quality of upland recreational activities, this measure would restore riparian habitat, which would support increased opportunities and improved quality of upland game hunting, wildlife viewing, botanical viewing, nature photography, hiking, walking, picnicking, and sightseeing.

Under CM8, 2,000 acres of grassland within CZ 1, CZ 8, and CZ 11 would be restored. Restoration activities for this measure would be associated with tidal habitat restoration under CM4 and

agricultural land protection under CM3. Anticipated actions to restore grassland habitat, as appropriate to site-specific conditions, would include, but not be limited to, acquiring lands, in fee title or through conservation easements, with site characteristics that support restoration of high–value grassland, restoring grassland by sowing native species using a variety of techniques, and potentially restoring grazing grassland habitat to modify its vegetation. While earthwork and site preparation of these areas could temporarily degrade recreational access and quality by introducing noise and odors into the setting, restoration of grassland communities would increase opportunities for upland hunting, wildlife viewing, botanical viewing, and nature photography due to improvements to wildlife and native plant habitats. Restoration of natural areas under this measure would also increase opportunities for upland hiking, walking, picnicking, and sightseeing.

Under CM9, vernal pool complex in CZ 1, CZ 8, and CZ 11 would be restored to achieve no net loss of this habitat type associated with BDCP covered activities. Anticipated actions to restore vernal pool complex habitat include acquiring lands, in fee-title or through conservation easement, suitable for restoration of vernal pool complex habitat; restoring remnant natural vernal pool and swale topography; restoring and maintaining natural hydrology; restoring and maintaining natural salt and suspended clay concentrations in vernal pool water; significantly reducing or preventing the deposition of substances that increase the fertility of the habitat; controlling the cover of invasive nonnative plant species; adjusting livestock grazing regimes in vernal pool complexes; preventing the introduction of invasive species; and hand collecting seed and vernal pool invertebrates from the vicinity of the vernal pools to be restored as a source for establishment of native species. Activities associated with the implementation of this measure could temporarily limit access to existing recreational opportunities and create noise, detracting from the experience; however, restoration of vernal pool complexes is anticipated to modestly increase opportunities for upland recreation including wildlife viewing, botanical viewing, and nature photography.

Under CM10, 1,200 acres of nontidal freshwater marsh within CZ 2 and CZ 4 and/or CZ 5 would be restored by year 40. CM10 actions would be phased with 400 acres restored by year 10, 600 by year 20 and the cumulative total of 1,200 acres restored by year 40. Restoration of nontidal freshwater emergent wetland and nontidal perennial aquatic natural communities would provide habitat for giant garter snake, western pond turtle, and other native wildlife and plant species characteristic of this habitat. Restored nontidal wetlands would also be designed and managed to support other native wildlife functions including waterfowl foraging, resting, and brood habitat and shorebird foraging and roosting habitat. Restored habitat would include preserved transitional upland habitat to provide upland habitat for giant garter snakes and western pond turtles and nesting habitat for waterfowl. While construction activities and access restrictions associated with this measure may reduce some upland recreational opportunities and create temporary construction effects from activities producing noise or odors, improvements in wildlife and native plant habitats associated with the measure would increase the quality of upland hunting, wildlife viewing, botanical viewing, and nature photography in and adjacent to restored areas.

Implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. This measure is expected to increase upland recreational opportunities by

permitting hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, and equestrian use, as well as a potential for limited hunting opportunities.

Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities available to hiking, nature photography, or other similar activity. However, implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality of recreational opportunities.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could result in the potential for incompatibilities with plans and policies related to protecting recreation resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues as overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 4 is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 4 on recreation resources is addressed in Impacts REC-1 through REC-11, and in other chapters such as Chapter 23, *Noise*, Section 23.3.3.9, and Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.9. The following is a summary of compatibility evaluations related to recreation resources for plans and policies relevant to the BDCP.

- The *New Melones Lake Area Final Resource Management Plan, Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area, General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, Folsom Lake State Recreation Area General Plan, Lake Oroville State Recreation Area Resource Management Plan and General Development Plan,* and *San Luis Reservoir State Recreation Area General Development Plan* all have policies or goals to protect the recreation

resources and promote a range of opportunities to visitors to these areas. Construction and operation of the proposed water conveyance facilities and other conservation measures would not affect recreation opportunities in these areas and would be compatible with these plans.

- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Delta Protection Act), *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan,* and *Brannan Island and Franks Tract State Recreation Areas General Plan* are all focused on the protection of resources, including recreation resources, within the Delta. These plans have policies, objectives, or goals intended to protect and enhance existing recreation and encourage development of new local and regional opportunities. Constructing the proposed conveyance facilities would result in long term disruption to existing established recreation areas in the study area and change the nature of the recreation setting. The proposed water conveyance elements could be considered incompatible with measures to protect existing recreation opportunities in the study area.

- The Delta Protection Act, the Delta Protection Commission's Great California Delta Trail System, and the *Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties* all promote development of a regional trail system providing a continuous regional recreational corridor to provide bikeways and hiking trails. The BDCP proponents would work with these regional and local efforts to design proposed restoration areas to be compatible with and complement the goals of creating a regional trail network and where feasible to adapt restoration proposals to incorporate recreational amenities and opportunities in these areas.

- Regional plans and those geared toward the management of specific areas, including the *Stone Lakes National Wildlife Refuge CCP, Cosumnes River Preserve Management Plan, Brannan Island and Franks Tract State Recreation Areas General Plan, Yolo Bypass Wildlife Area Land Management Plan, the Yolo County General Plan, Lower Sherman Island Wildlife Area Land Management Plan, San Francisco Bay Plan, Suisun Marsh Protection Plan,* and *Solano County General Plan Suisun Marsh Policy Addendum* are primarily designed to preserve and enhance the natural resource and recreation qualities of these areas. Implementing the BDCP alternatives may create disruptions related to facility and restoration improvements. Proposed restoration areas in the Yolo Bypass, on Sherman Island, and in Suisun Marsh would be designed to be compatible with and complement the current management direction for these areas and would be required to adapt restoration proposals to meet current policy established for managing these areas.

- The BDCP would be constructed and operate in compliance with regulations related to boat navigation jurisdiction, rules, and regulations enforced by local, state (including the California Department of Parks and Recreation's Division of Boating and Waterways), and federal (including the U.S. Coast Guard) boating law enforcement. The alternative would be compatible with California State Land Commission regulations related to recreational piers or marinas.

- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2012b). Recreation at these parks would not be affected by this alternative.

- Alternative 4 would result in the construction of permanent and temporary features associated with the proposed water conveyance facility across land governed by the general plans of Sacramento, San Joaquin, Contra Costa, and Alameda Counties. The county general plans all have policies related to the protection of recreation resources and encourage the development of new water-based and land-based recreation opportunities. Sacramento and San Joaquin Counties

recognize the Delta as an area of international importance and as a major recreational resource of these counties. Construction activities that disrupt and degrade recreation opportunities in the study area would be incompatible with policies designed to protect recreation resources, including those intended to protect open space and natural areas and those that discourage development of public facilities and infrastructure unless it is related to agriculture, natural resources and open space, and has recreational value.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.10 Alternative 5—Dual Conveyance with Pipeline/Tunnel and Intake 1 (3,000 cfs; Operational Scenario C)

For the purposes of assessment of effects on recreation, Alternative 5 is the same as Alternative 1A, with the following exceptions.

- Only one intake facility would be constructed under Alternative 5 (Intake 1).
- Alternative 5 has a different operations scenario.
- Under Alternative 5, tidal habitat restoration would be limited to 25,000 acres.

Table 15-11 under Alternative 1A lists the recreation sites and areas that may be affected by Alternative 5 (Mapbook Figure M15-1), except that recreation sites or areas affected by construction of Intakes 2, 3, 4, or 5 would not be affected under Alternative 5. Specific effects on recreation areas or sites are discussed under Alternative 1A.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 5 effects would be the same as those discussed under Alternative 1A, with the exception that Alternative 5 proposes one intake site rather than 5 (Intake 1). The proposed location of the Alternative 5 intake facility, tunnels, and associated water conveyance facilities would not lie within the designated boundaries of any existing public use recreation site. The post-construction location of the water conveyance facilities would not result in long-term disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.10, and Chapter 23, *Noise*, Section 23.3.3.10, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary conflicts with recreational opportunities or experiences under Alternative 5 would be similar to those described for Alternative 1A; however, only one intake location (Intake 1) would be constructed under Alternative 5. Effects associated with Alternative 5 construction of physical components would be anticipated to be less severe relative to Alternative 1A for the Clarksburg Fishing Access and Stone Lakes NWR because Intakes 2, 3, 4, and 5 would not be constructed. However, overall, substantial disruption of recreation opportunities at the sites within the alternative impact area would still occur. Construction may occur year-round and last from 1 to 5 years and in-river construction activities primarily would be limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources,* Section 12.3.3.10, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.10, Chapter 19, *Transportation*, Section 19.3.3.10, and Chapter 23, *Noise*, Section 23.3.3.10, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.10, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect

camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources,* Section 12.3.3.10, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.10, Chapter 19, *Transportation*, Section 19.3.3.10, and Chapter 23, *Noise*, Section 23.3.3.10, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.10, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive

receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.10, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 5 intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that would result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary conflicts with recreational opportunities or experiences under this alternative would be similar to those described for Alternative 1A; however, only one intake location would be constructed under Alternative 5. While effects associated with this alternative would therefore be anticipated to be less severe than those from Alternative 1A, long-term conflicts with navigation would remain. Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intake. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where the intake is proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, or tubing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. Construction of only one intake rather than 5 would reduce the extent of this effect on Sacramento River navigation, although the effect would still be long-term because construction would last for more than 2 years. These effects would be addressed with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Nonetheless, these effects would be long-term would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

Construction of temporary barge unloading facilities would result in adverse effects on boat passage and navigation on the Sacramento River and other waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would last up to 5 years (long-term) and would be considered adverse.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intake and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result

of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 5 would be similar to those described under Alternative 1A, Impact REC-4. However, only one intake location (Intake 1) would be constructed under Alternative 5, so effects associated with construction of physical components would be anticipated to be less severe.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.10, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would

also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 5 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.10, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 5 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 5 would result in changes in the frequency with which the end of September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (LLT-2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 5 (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 5 there would be from 3 to 28 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 5 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 5 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 5.

No Action Alternative (2060) Compared to Alternative 5 (2060)

The comparison of Alternative 5 (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

In comparisons of Alternative 5 (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 5 operations, with the exception of San Luis Reservoir, would either not change or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) (Table 15-12a and Table 15-12b). These changes in reservoir elevations at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake would not be adverse. At Lake Oroville, Folsom Lake, and New Melones Lake, because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these effects would be considered beneficial effects on recreation opportunities and experiences. Operation of Alternative 5 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. At Lake Oroville, Folsom Lake, and New Melones Lake these conditions represent improved recreation conditions under operation of Alternative 5 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 5 (2060) conditions (22 years) relative to the No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be two fewer years below the threshold which would be considered a beneficial effect). Therefore, because the Basalt boat launch would still be available for access to the reservoir and there would be two fewer years in which the end-of-September reservoir elevation would fall below recreation threshold at Basalt, these changes would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 5 (2060) operations would fall below the individual reservoir thresholds either with the same or reduced frequency than under the No Action Alternative (2060). These changes in reservoir elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Lake Oroville, Folsom Lake, and New Melones Lake, because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled two fewer years of exceeding the recreation threshold at the Basalt boat launch attributable to operation of Alternative 5 (2060) relative to the No Action Alternative (2060) would be less than significant and beneficial. Operation of Alternative 5 would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, this would be a less-than-significant impact. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities under Alternative 5 would be similar to those described for Alternative 1A; however,

maintenance activities would only be necessary for one intake facility under this alternative. Maintenance would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation opportunities as a result of maintenance of conveyance facilities under Alternative 5 would be similar to those described for Alternative 1A, Impact REC-8; however, under Alternative 5, only one intake facility would be constructed. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 5 could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 5 would be similar to those described for Alternative 1A; however, under this

alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other BDCP alternatives). CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.10). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c will address traffic and transportation safety and access

conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.10). Mitigation Measures NOI-1a and NOI-1b will address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.10). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.10).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 5 would be similar to those described for Alternative 1A; however, under this Alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other BDCP alternatives). Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.10). Mitigation measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.10).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs

navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c will address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.10). Mitigation Measures NOI-1a and NOI-1b will address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.10). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 5 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other BDCP alternatives). Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19, or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 5 would generally have the same potential for incompatibilities with one or more plans and policies related to protecting recreation opportunities in the study area as described for Alternative 1A, Impact AES-12. The primary differences under Alternative 5 are that only Intake 1 would be constructed and the Byron Tract Forebay would be 200 acres instead of 600 acres. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect recreation resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.11 Alternative 6A—Isolated Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario D)

For the purposes of assessment of effects on recreation, Alternative 6A is the same as Alternative 1A, with the following exceptions.

- Alternative 6A utilizes isolated conveyance.
- Alternative 6A has a different operational scenario (scenario D).

Table 15-11 under Alternative 1A lists the recreation sites and areas that may be affected by Alternative 6A. No recreation sites fall within the construction footprint (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed under Alternative 1A.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** The effects of permanent displacement of existing recreational facilities as a result of the location of the water conveyance facilities would be the same as those described under Alternative 1A, Impact REC-1. Proposed placement of the Alternative 6A water conveyance facilities would not fall within the designated boundaries or conflict with any existing public use recreation site and would not result in the permanent disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.11, and Chapter 23, *Noise*, Section 23.3.3.11, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** The temporary conflicts between recreational opportunities and the construction of conveyance facilities under Alternative 6A would be the same as those described under Alternative 1A, Impact REC-2. Construction of Alternative 6A intakes and water conveyance facilities would result in temporary effects related to disruption of well-established recreational opportunities and experiences in the study area during construction. Indirect effects on recreation experience may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.11, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last up from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction activities would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.11, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.11, Chapter 19, *Transportation*, Section 19.3.3.11, and Chapter 23, *Noise*, Section 23.3.3.11, for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.11, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In

addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.11, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many

alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 6A intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Under this alternative, recreational boat navigation would be affected to the same extent as described under Alternative 1A, Impact REC-3.

Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, or tubing fishing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. These effects on boat passage and navigation would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements and providing notification of construction activities in waterways.

Construction of temporary barge unloading facilities would result in adverse effects on boat passage and navigation on the Sacramento River and other waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Mitigation

Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would last up to 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including

specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 6A would be the same as those described under Alternative 1A, Impact REC-4. As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.11, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic

design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 6A may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.11, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 6A would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 6A would result in changes in the frequency with which the end-of-September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 6A (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 6A there would be from 3 to 64 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 6A cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 6A (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 6A.

No Action Alternative (2060) Compared to Alternative 6A (2060)

The comparison of Alternative 6A (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

As shown in Table 15-12a and Table 15-12b, operation of Alternative 6A would result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds. In all but one instance (San Luis Reservoir), the CASIM II modeling results indicate that reservoir levels under Alternative 6A (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake and would be considered beneficial effects on recreation opportunities and experiences because there would be fewer years in which the lake levels fall below the recreation threshold relative to the No Action Alternative

(2060). Operation of Alternative 6A would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 6A because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 58 additional years relative to the No Action Alternative (2060) condition for which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) conditions (there would be three additional years). This is a less than 10% change (8 years or less) and would not be considered a substantial reduction in recreation opportunities. Therefore, because the Basalt boat launch would still be available for access to the reservoir, these changes would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing— would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 6A (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative 6A (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). This would be a less-than-significant impact. No mitigation is required. Operation of Alternative 6A would not substantially affect water-dependent or water-enhanced recreation at these reservoirs.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects of facility maintenance activities on water-based recreation under Alternative 6A would be similar to those described under Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects.

Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation under Alternative 6A would be the same as those described for Alternative 1A, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 6A could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6A would be similar to those described for Alternative 1A. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan

(Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.11). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c will address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.11). Mitigation measures NOI-1a and NOI-1b will address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.11). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.11).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6A would be similar to those described for Alternative 1A. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.11). Mitigation measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.11).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.11). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.11). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 6A would have similar impacts on upland recreation activities as those described for Alternative 1A, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding

mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6A would generally have the same potential for incompatibilities with one or more plans and policies related to protecting and promoting recreation opportunities in the study area as described for Alternative 1A, Impact AES-12. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.12 Alternative 6B—Isolated Conveyance with East Alignment and Intakes 1–5 (15,000 cfs; Operational Scenario D)

For the purposes of assessment of effects on recreation, Alternative 6B is the same as Alternative 1B, with the following exceptions.

- Alternative 6B utilizes isolated conveyance.
- Alternative 6B has a different operational scenario (scenario D).

Table 15-13 under Alternative 1B lists the recreation sites and areas that may be affected by Alternative 6B (Mapbook Figure M15-2). Specific effects on recreation areas or sites are discussed under Alternative 1B.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** The effects of permanent displacement of existing recreational facilities as a result of the location of the water conveyance facilities under Alternative 6B would be the same as those described under Alternative 1B, Impact REC-1. Proposed placement of the Alternative 6B water conveyance facilities may fall within the boundaries of Stone Lakes NWR, Cosumnes River Preserve, and White Slough Wildlife Area Pond 6 (Table 15-13 and Mapbook Figure M15-2); however, permanent placement of these facilities would not result in long-term disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.12, and Chapter 23, *Noise*, Section 23.3.3.12, for additional discussion of these topics.

***CEQA Conclusion*:** Alternative 6B would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** The temporary conflicts between recreational opportunities and the construction of conveyance facilities would be the same as those described under Alternative 1B, Impact REC-2. Construction of Alternative 6B intakes and proposed water conveyance facilities would result in temporary short-term and long-term effects related to disruption of well-established recreational opportunities and experiences in the study area. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering

would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.12, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland,

and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.12, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway

segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.12, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 6B intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Under this Alternative, recreational boat navigation would be affected to the same extent as under Alternative 1B, Impact REC-3. Changes to boat passage and navigation on the Sacramento River in the vicinity of the intakes, barge unloading facilities and the siphons would result in adverse direct and indirect effects on recreational navigation in the affected waterways.

Direct effects would result from the creation of obstructions to boat passage and associated boat traffic delays and temporary channel closures that could impede boat movement. Changes to boat passage would also result in effects on recreational navigation and water-based recreation activities such as wakeboarding, waterskiing, and tubing. Although there may be short delays in boat passage, access to the affected waterways would be maintained. The sloughs where siphons would cross do not support large boat traffic volumes and construction activities would not result in substantial adverse effects. However, because boat passage and navigation would be disrupted, effects are considered adverse. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Alternative 1B would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays and impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 6B would be similar to those described under Alternative 1A, Impact REC-4.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.12, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would

also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 6B may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.12, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 6B would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 6B would be the same as Alternative 6A and would primarily result in small changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would fall below levels identified as important water-dependent recreation thresholds. Changes at San Luis Reservoir show greater difference when compared to the no action conditions than projected for the other reservoirs. See Table 15-12a and Table 15-12b. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 6B (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 6B there would be from 3 to 64 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 6B cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 6B (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 6B.

No Action Alternative (LLT-2060) Compared to Alternative 6B (2060)

The comparison of Alternative 6B (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

As shown in Table 15-12a and Table 15-12b, operation of Alternative 6B would result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds. In all but one instance (San Luis Reservoir), the CASIM II modeling results indicate that reservoir levels under Alternative 6B (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake and would be considered beneficial effects on recreation opportunities and experiences because there would be fewer years in which the lake levels fall below the recreation threshold relative to the No Action Alternative (2060). Operation of Alternative 6B would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 6B because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 58 additional years relative to the No Action Alternative (2060) condition for which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) conditions (there would be three additional years). This is a less than 10% change (8 years or less) and would not be considered a substantial reduction in recreation opportunities. Therefore, because the Basalt boat launch would still be available for access to the reservoir, these changes would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing— would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 6B (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative 6B (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). This would be a less-than-significant impact. No mitigation is required. Operation of Alternative 6B would not substantially affect water-dependent or water-enhanced recreation at these reservoirs.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects of facility maintenance activities on water-based recreation under Alternative 6B would be similar to those described under Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation under Alternative 6B would be the same as those described for Alternative 1B, Impact REC-8 and would not affect recreation opportunities. The right-of-way under Alternative 6B includes the Stone Lakes NWR, White Slough Wildlife Area, and Cosumnes River Preserve; however, the lands in the Stone Lakes NWR and Cosumnes River Preserve in the right-of-way are not used for recreation, so there would be no effects on recreation opportunities. In the White Slough Wildlife Area (Pond 6) there would be a bridge right-of-way; facility maintenance activities would be restricted to roadway maintenance and would not affect recreation opportunities in the wildlife area. Maintenance would be short-term and intermittent and there would be no long-term change to recreation opportunities as a result of maintenance of conveyance facilities. There would be no adverse effects.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 6B could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed

over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6B would be similar to those described for Alternative 1B, Impact REC-9. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.12). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at

construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.12). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.12). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.12).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6B would be similar to those described for Alternative 1B. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.12). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.12).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term

disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.12). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.12). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 6B would have similar impacts on upland recreation activities as those described for Alternative 1B. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6B would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1B, Impact AES-12. As described under Alternative 1B, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta

Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect recreation opportunities in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.13 Alternative 6C—Isolated Conveyance with West Alignment and Intakes W1–W5 (15,000 cfs; Operational Scenario D)

For the purposes of assessment of effects on recreation, Alternative 6C is the same as Alternative 1C, with the following exceptions.

- Alternative 6C utilizes isolated conveyance.
- Alternative 6C has a different operational scenario (scenario D).

Table 15-14 under Alternative 1C lists the recreation sites that may be affected by Alternative 2C.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 6C includes locating a tunnel, ventilation/access shaft and permanent access road to the tunnel shaft on Twitchell Island, and would have the same effects as discussed under Alternative 1C, Impact REC-1 Post-construction, no recreational facilities would be permanently displaced as a result of the location of Alternative 6C water conveyance facilities. Therefore, there would be no adverse effects. Temporary effects that may occur as a result of construction are noted under Impact REC-2, below. Also see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.13, and Chapter 23, *Noise*, Section 23.3.3.13, for additional discussion of these topics.

***CEQA Conclusion*:** Alternative 6C would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** The temporary disruption of recreational opportunities as a result of construction of conveyance facilities would be the same as those described under Alternative 1C, Impact REC-2. Construction of Alternative 6C facilities would result in temporary short-term and long-term effects related to disruption of well-established recreational opportunities and experiences at recreation sites or areas in the study area. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake W1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Rivers End Marina & Boat Storage is not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.13, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.13, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.13, Chapter 19, *Transportation*, Section 19.3.3.13, and Chapter 23, *Noise*, Section 23.3.3.13 for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1C, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation

Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.13, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and

Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.13, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of the Alternative 2C intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and commitments would reduce the impacts

on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Under this Alternative, recreational boat navigation would be affected to the same extent as under Alternative 1C. Alternative 6C would result in the creation of obstructions to boat passage causing boat traffic delays, and impediments to boat movement. Overall, effects on temporary alteration of recreational navigation would be considered adverse. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, effects on waterskiing, wakeboarding or tubing opportunities would last approximately 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Alternative 6C would result in significant impacts on boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays, impediments to boat movement. Changes to boat passage and navigation would also result in temporary impacts on wakeboarding, waterskiing, and tubing because of reduced speeds and passage impediments. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 6C would be similar to those described under Alternative 1A, Impact REC-4.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.13, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving.

However, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers. Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g).

Although construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures AQUA-1a and AQUA-1b would avoid and minimize adverse effects on sport fish populations from impact pile driving, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans,

hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. However, the overall experience for anglers would be degraded because of elevated noise and degraded visual conditions. Construction would last up to 5 years; although this would be temporary, it would result in a long-term reduction of local fishing opportunities and experiences and would be a significant and unavoidable impact because the public use of established recreation facilities in the study area would be affected for more than 2 years. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 6C may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.13, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 6C would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 6C would be the same as Alternative 6A and would primarily result in small changes in the frequency with which the end-of-September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would fall below levels identified as important water-dependent recreation thresholds. Changes at San Luis Reservoir show greater difference when compared to the no action conditions than projected for the other reservoirs. See Table 15-12a and Table 15-12b. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 6C (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 6C there would be from 3 to 64 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Folsom Lake, and at San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 6C cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 6C (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 6C.

No Action Alternative (2060) Compared to Alternative 6C (2060)

The comparison of Alternative 6C (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

As shown in Table 15-12a and Table 15-12b, operation of Alternative 6C would result in changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds. In all but one instance (San Luis Reservoir), the CASIM II modeling results indicate that reservoir levels under Alternative 6C (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) conditions. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake and would be considered beneficial effects on recreation opportunities and experiences because there would be fewer years in which the lake levels fall below the recreation threshold relative to the No Action Alternative (2060). Operation of Alternative 6C would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 6C because there would be fewer years in which end-of-September

reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

The modeling for San Luis Reservoir indicates there could be up to 58 additional years relative to the No Action Alternative (2060) condition for which the reservoir level would fall below the reservoir boating threshold at the end of September for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) conditions (there would be three additional years). This is a less than 10% change (8 years or less) and would not be considered a substantial reduction in recreation opportunities. Therefore, because the Basalt boat launch would still be available for access to the reservoir, these changes would not be adverse. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing— would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 6C (2060) operations would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeled additional three years of exceeding the recreation threshold attributable to operation of Alternative 6C (2060) relative to the No Action Alternative (2060) would be less than significant because it is a less than 10% change (8 years or less). This would be a less-than-significant impact. No mitigation is required. Operation of Alternative 6C would not substantially affect water-dependent or water-enhanced recreation at these reservoirs.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects of facility maintenance activities on water-based recreation under Alternative 6C would be similar to those described under Alternative 1A, Impact REC-7, and would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation under Alternative 6C would be the same as those described for Alternative 1C, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 6C could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6C would be similar to those described for Alternative 1C. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.13).

Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.13). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.13). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources,* Section 11.3.4.13).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6C would be similar to those described for Alternative 1C. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.13). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.13).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.13). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.13). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 6C would have similar impacts on upland recreation activities as those described for Alternative 1C, Impact REC-11. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding

mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6C would generally have the same potential for incompatibilities with one or more plans and policies related to protecting recreation resources in the study area as described for Alternative 1C, Impact AES-12. As described under Alternative 1C, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of San Joaquin County, the alternative may be incompatible with county general plan policies that protect recreation resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.14 Alternative 7—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Enhanced Aquatic Conservation (9,000 cfs; Operational Scenario E)

For the purposes of assessment of effects on recreation, Alternative 7 is the same as Alternative 1A, with the following exceptions.

- Alternative 7 has three proposed intakes, rather than five—Intakes 2, 3, and 5.

- Alternative 7 has a different operational scenario (scenario E).
- The restoration measures for Alternative 7 include an additional 20 miles of channel margin restoration and an additional 10,000 acres of seasonally inundated floodplain.

Table 15-11 under Alternative 1A lists the recreation sites and areas that may be affected by Alternative 7, except that sites or areas affected by Intakes 1 or 4 would not be affected under this alternative (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed under Alternative 1A.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 7 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only three intake locations (Intakes 2, 3, and 5) would be constructed under Alternative 7. The proposed location of the intake facilities, tunnels, and associated water conveyance facilities would not lie within the designated boundaries of an existing public use recreation site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.14, and Chapter 23, *Noise*, Section 23.3.3.14, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary disruption of well-established recreational opportunities or experiences under Alternative 7 would be the same as described for Alternative 4. Construction of Alternative 7 facilities would result in temporary short-term and long-term effects related to disruption of well-established recreational opportunities and experiences at recreation sites or areas in the study area. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water

conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.14, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, construction may occur year-round and last from 1 to 5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.14, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.14, Chapter 19, *Transportation*, Section 19.3.3.14, and Chapter 23, *Noise*, Section 23.3.3.14 for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental

commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.14, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes

of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.14, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 7 intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary conflicts with recreational opportunities or experiences under this alternative would be the same as those described for Alternative 4. Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects could include reduced access and delays to boat passage and navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, tubing, or fishing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. These effects on boat passage and navigation would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

Construction of temporary barge unloading facilities would result in adverse effects on boat passage and navigation on the Sacramento River and other waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where

initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would last up to 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 7 would be the same as those described under Alternative 4, Impact REC-4.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.14, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure

plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. However, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, Aesthetics and Visual Resources, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 7 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.14, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 7 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 7 would result in changes in the frequency with which the end of September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 7 (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 7 there would be from 1 to 45 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing

condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Folsom Lake, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 7 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 7 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 7.

No Action Alternative (2060) Compared to Alternative 7 (2060)

The comparison of Alternative 7 (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

In comparisons of Alternative 7 (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 7 operations, with the exception of Folsom Lake and San Luis Reservoir, would either not change (New Melones Lake) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) (Table 15-12a and Table 15-12b). These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Oroville Reservoir, Folsom Lake, and New Melones Lake. At Trinity Lake, Shasta Lake, and Lake Oroville these changes would be considered beneficial effects on recreation opportunities and experiences under Alternative 7 operations because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions. Operation of Alternative 7 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 7 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 7 (2060) (39 years) relative to No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be three less years below the threshold). This change would not result in a substantial reduction in recreation opportunities or experiences. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 7 (2060) operations would either not change (New Melones Lake) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered

beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeling indicates there would be three fewer years when reservoir elevations would exceed the recreation threshold under operation of Alternative 7 (2060) relative to the No Action Alternative (2060) which would be a beneficial impact. Operation of Alternative 7 would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, Alternative 7 would result in a less-than-significant impact on recreation opportunities and experiences. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities under Alternative 7 would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for three intake facilities under this alternative. Maintenance would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation as a result of maintenance of conveyance facilities under Alternative 7 would be the same as those described for Alternative 4, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 7 could have effects related to recreational fishing that are similar

in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 7 would be similar to those described for Alternative 1A; however, under this Alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other BDCP alternatives. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.14). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-

related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.14). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.14). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.14).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 7 would be similar to those described for Alternative 1A; however, under this alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other BDCP alternatives. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.14). Mitigation Measures NOI-1a and NOI-1b are available to address

construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.14).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.14). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.14). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 7 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other BDCP alternatives. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19, or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than

significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 7 would generally have the same potential for incompatibilities with one or more plans and policies related to protecting and promoting recreation opportunities in the study area as described for Alternative 4, Impact AES-12. As described under Alternative 4, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.15 Alternative 8—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Increased Delta Outflow (9,000 cfs; Operational Scenario F)

For the purposes of assessment of effects on recreation, Alternative 8 is the same as Alternative 1A, with the following exceptions.

- Alternative 8 has three proposed intakes, rather than five—Intakes 2, 3, and 5.
- Alternative 8 has a water operations scenario achieving up to 1.5 million acre-feet (MAF) of increased Delta outflow.
- Alternative 8 restoration acreage targets may vary from other BDCP alternatives.

Table 15-11 under Alternative 1A lists the recreation sites and areas that may be affected by Alternative 8 (Mapbook Figure M15-1). Specific effects on recreation areas or sites are discussed below.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** Alternative 8 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A, Impact REC-1; however, only three intake locations would be constructed under Alternative 8 (Intakes 2, 3, and 5). Proposed placement of the Alternative 8 intakes and water conveyance facilities would not fall within the designated boundaries or conflict with any existing public use recreation site that would permanently displace those facilities. Therefore, there would be no adverse effects. Effects on recreation related to construction of the water conveyance facilities are discussed below in Impact REC-2. Also see Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.15, and Chapter 23, *Noise*, Section 23.3.3.15, for additional discussion of these topics.

***CEQA Conclusion*:** The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary disruption of well-established recreational opportunities or experiences under Alternative 8 would be the same as described for Alternative 4. Construction of Alternative 8 facilities would result in temporary short-term and long-term effects related to disruption of well-established recreational opportunities and experiences at recreation sites or areas in the study area. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction.

Other Recreation Opportunities

On-Water Recreation

Cliff's Marina is upstream of Intake 1 construction area and Clarksburg Marina falls between the construction impact area for Intake 1 and 2. Similarly, Lazy M Marina and Rivers End Marina & Boat Storage sites are not within the construction impact area for the Byron Tract Forebay and related facilities near Clifton Court Forebay. Although these facilities and other marinas or fishing sites fall outside of the impact area for noise, the overall recreation experience upstream or downstream of these sites may fall within the noise impact area and could experience diminished recreation opportunities because of the elevated noise levels as well as visual setting disruptions over the course of intake installation. Overall, construction activities associated with the proposed water conveyance facilities would range from 1 year to up to 5 years depending on the site. Work would primarily occur Monday through Friday for up to 24 hours per day. In-river construction would be further limited primarily to June 1 through October 31 each year. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. Weekday construction would reduce the amount of fish and other wildlife in recreation areas in the vicinity of the intakes, resulting in decreased recreation opportunities related to wildlife and fish, causing recreationists to experience a changed recreation setting.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.15, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction could be infrequent and intermittent, but would adversely affect camping sites. Nighttime construction would not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Summary

Overall, substantial disruption of recreation opportunities at the sites within the alternative impact area would still occur. Construction may occur year-round and last from 1 to 5 years and in-river construction activities primarily would be limited to June 1 through October 31 each year. Also see Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.15, Chapter 17, *Aesthetics and Visual Resources,* Section 17.3.3.15, Chapter 19, *Transportation*, Section 19.3.3.15, and Chapter 23, *Noise*, Section 23.3.3.15 for additional detail related to waterfowl/wildlife, aesthetics/visual resources, transportation, and noise, respectively. Please refer to Alternative 1A, Impact REC-2 for detailed discussions of the potential effects at specific recreation sites or areas within the construction impact area.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 reater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and

other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.15, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would

limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.15, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 8 intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that would result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to temporary conflicts with recreational opportunities or experiences under this alternative would be to the same as those described for Alternative 4. Direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects of cofferdam construction could include reduced access and delays to boat passage and

navigation related to the narrower available river width and temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as waterskiing, wakeboarding, tubing, or fishing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. These effects on boat passage and navigation would be reduced with the implementation of Mitigation Measure TRANS-1a that involves the BDCP proponents developing and implementing site-specific construction traffic management plans, including waterway navigation elements. Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

Construction of temporary barge unloading facilities would result in adverse effects on boat passage and navigation on the Sacramento River and other waterways in the study area, including the creation of obstructions to boat passage and associated boat traffic delays and temporary partial channel closures that could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same

regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would last up to 5 years (long-term) and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Impacts on boat passage and navigation in the study area would result from the construction of the intakes and temporary barge unloading facilities. Impacts would last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary channel closures could impede boat movement and eliminate recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 8 would be the same as those described under Alternative 4, Impact REC-4.

As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.15, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b

would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. However, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 8 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.15, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 8 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 8 would result in changes in the frequency with which the end of September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 8 (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 8 there would be from 4 to 73 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Lake Oroville, Folsom Lake, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model

simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 8 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 8 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 8.

No Action Alternative (2060) Compared to Alternative 8 (2060)

The comparison of Alternative 8 (LLT-2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

In comparisons of Alternative 8 (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 8 operations, with the exception of San Luis Reservoir, would either not change (Lake Oroville and New Melones Lake) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) (Table 15-12a and Table 15-12b). These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Trinity Lake, Shasta Lake, and Folsom Lake, these changes would be considered beneficial effects on recreation opportunities and experiences under Alternative 8 operations because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions. Operation of Alternative 8 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 8 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 8 (2060) (67 years) relative to No Action Alternative (2060) for the Dinosaur Point boat launch. In addition, modeling indicates that reservoir levels would fall below the Basalt boat launch threshold levels more frequently under Alternative 8 (2060) conditions (there would be 59 additional years) relative to the No Action Alternative (2060) conditions. These increases in the loss of boating recreation opportunity at San Luis Reservoir would be considered substantial changes from the No Action Alternative (2060) conditions and would be adverse. Mitigation Measure REC-6 would be available to address this effect.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 8 (2060) operations would either not change (Lake Oroville and New Melones Lake) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060). Because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, boating opportunity would be reduced more frequently for the Dinosaur Point boat launch (67 additional years relative to the No Action Alternative [2060]) and the Basalt boat launch (59 additional years relative to the No Action Alternative [2060]). These changes in boat access to the reservoir would be a greater than 10% change (8 years) and could be a significant impact on

opportunities at San Luis Reservoir. Mitigation Measure REC-6 would reduce this impact to a less-than-significant level.

Mitigation Measure REC-6: Provide a Temporary Alternative Boat Launch to Ensure Access to San Luis Reservoir

Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for three intake facilities under this alternative. Maintenance would result in periodic temporary but not substantial effects on boat passage and water-based recreational activities. Any effects would be short-term (less than 2 years) and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Intake maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. Mitigation is not required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Changes to land-based recreation as a result of maintenance of conveyance facilities under Alternative 8 would be the same as those described for Alternative 4, Impact REC-8. Maintenance would be short-term and intermittent and would be conducted within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. There would be no adverse effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 8 could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 8 would be similar to those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.15). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component

facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.15). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.15). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.15).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 8 would be similar to those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered. Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.15). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.15).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.15). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.15). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 8 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. However, environmental commitments would reduce these effects, and implementation of the measures would also restore or enhance new potential sites for upland recreation thereby improving the quality recreational opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18, CM19 or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 8 would generally have the same potential for incompatibilities with one or more plans and policies related to protecting and promoting recreation opportunities in the study area as described for Alternative 4, Impact AES-12. As described under Alternative 4, there would be potential for the alternative to be incompatible with plans and policies related to protecting and promoting recreation opportunities in the study area (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*, *Delta Plan*, *Brannan Island and Franks Tract State Recreation Areas General Plan*). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.3.16 Alternative 9—Through Delta/Separate Corridors (15,000 cfs; Operational Scenario G)

Table 15-16 lists the recreation sites that fall within the construction impact area. Specific effects are discussed below.

Table 15-16. Recreation Sites Potentially Affected during Construction of Alternative 9

Recreation Site or Area	Primary Alternative Feature	Impact Source	Duration
Stone Lake National Wildlife Refuge	Access road	Noise and visual disturbances	Up to 1 year
Delta Meadows River Park (*note: this park remains closed until further notice*)	Channel enlargement and work area; operable barrier and work area; bridge; transmission line; access road; borrow and/or spoil site; fuel station	Noise and visual disturbances	Up to 2 years
Cosumnes River Preserve	Channel enlargement and work area; operable barrier and work area; bridge; transmission line; access road; borrow and/or spoil site	Noise and visual disturbances; access	Up to 2 years
Boathouse Marina	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbances; access	Up to 4 years Permanent displacement of area by fish screen
Landing 63	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbances; access	Up to 4 years
Deckhand's Marine Supply	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbances; access	Up to 4 years

Recreation Site or Area	Primary Alternative Feature	Impact Source	Duration
Walnut Grove Dock	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbance; access	Up to 4 years Permanent displacement of area by fish screen
Boon Dox Dock	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbances; access	Up to 4 years Permanent displacement of area by fish screen
Dagmars Landing	Intake and work area; operable barrier; fish screen area; transmission line	Noise and visual disturbances; access	Up to 4 years
Brannan Island State Recreation Area (*Note: this park is closed until further notice*)	Operable barrier and work area; access road.	Noise and visual disturbances	Up to 2 years
Sherman Island	Operable barrier and work area; borrow and/or spoil site; access road; transmission line	Noise and visual disturbances	Up to 2 years
Bullfrog Landing & Marina	Dredging work area; spoil area; access road; operable barrier and associated work area.	Noise and visual disturbances; access	Up to 2 years
Union Point Marina Bar & Grill	Dredging work area; access road; spoil site	Noise and visual disturbances; access	Up to 2 years
Clifton Court Forebay	Canal; siphon and associated work area; borrow and/or spoil site; access road;	Noise and visual disturbances; access	Up to 2 years
Rivers End Marina & Storage	Canal; levee work area; new channel; transmission line	Noise and visual disturbances; access	Up to 2 years

Sources: GIS data layers available from DWR: CPAD, Green Info Network, 2011; USFWS Boundaries, USFWS 2012; Recreation Areas, AECOM/ICF 2012; Recreation Facilities, AECOM/ICF 2012.

Note: Construction duration information is approximate and subject to further revision.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

***NEPA Effects*:** There are six recreation sites or areas within the Alternative 9 construction footprint (Mapbook Figure M15-5), three of which would be permanently displaced by placement of the fish screen and intakes at the Delta Cross Channel and Georgiana Slough. Construction of the fish screens and intakes would result in permanent direct effects on recreation opportunities available at the Boathouse Marina, Walnut Grove Public Guest Dock, and Boon Dox guest dock in Walnut Grove. In addition, although operable barriers are proposed within Delta Meadows River Park, Brannan Island State Recreation Area, and Sherman Island, placement of these features within these areas would not result in displacement of any existing facilities, but would result in temporary construction-related effects which are discussed under Impact REC-2, below. In addition, it is noted that the effect on recreation at Delta Meadows River Park and Brannan Island State Recreation Area would further depend on whether these parks are reopened and operational at the time of construction.

Boathouse Marina

Recreation opportunities at Boathouse Marina at Locke would be directly affected by the fish screen installed at the mouth of the Delta Cross Channel. The upstream most 650 feet of the 2,800-foot-long fish screen would occupy about 50% of the riverbank area now occupied by the marina. The marina provides 56 boat berths and indoor storage for 48 boats. In addition, modification of the river levee in conjunction with the fish screen would require removal of the main marina building, a former packing shed that provides indoor boat storage and houses the marina office, and other marina services. Because installing the fish screen would require a portion of the marina berths and the primary marina structure to be removed, the marina could no longer operate in this location, and these berthing opportunities would be lost.

Walnut Grove Public Guest Dock

The Walnut Grove public guest dock, just upstream of the Walnut Grove Bridge, could also be affected by the fish screen at the mouth of the Delta Cross Channel. The downstream end of the fish screen would be immediately upstream of the guest dock. Addition of the fish screen to the waterway could make it more challenging for boats to navigate safely to and from the guest dock, and changes in river currents related to the fish screen could also affect boaters' use of the dock. Together, these factors could make continued operation of the dock infeasible. Therefore, this guest docking opportunity could be lost, reducing boater's access to the goods and services provided in Walnut Grove.

Boon Dox Guest Dock

The Boon Dox guest dock, downstream from the Walnut Grove public dock, on the other side of the Walnut Grove Bridge, would be affected by the fish screen planned for the mouth of Georgiana Slough. The upstream end of the fish screen would occupy the riverbank area now occupied by the guest dock, which is used by boating patrons of the Boon Dox convenience store and possibly by other boaters visiting Walnut Grove. Therefore, this guest docking opportunity would be lost, also reducing boater's access to the goods and services provided in Walnut Grove.

Construction of Alternative 9 fish screens and intakes would result in the direct permanent loss of well-established recreation facilities: Boathouse Marina, Walnut Grove public guest dock, and Boon Dox guest dock. As discussed under Impact REC-3 and in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Potential uses of these funds could be for the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. However, these effects would still be adverse due to the permanent loss of these recreation facilities.

***CEQA Conclusion*:** Construction of Alternative 9 fish screens and intakes would result in the direct permanent loss of well-established recreation facilities: Boathouse Marina, Walnut Grove public

guest dock, and Boon Dox guest dock. BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. However, these impacts are considered significant and unavoidable.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Three recreation areas—Delta Meadows State Park, Brannan Island State Recreation Area, and Sherman Island—are within the construction footprint and would have temporary construction-related activities occurring within or directly adjacent to their boundaries causing temporary disruption to recreational opportunities and uses.

Adverse effects on recreational sites within the construction impact area may include restricted access to a recreation facility or use; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction activities that adversely affects the ability of visitors to participate in recreational activities at the site. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period.

The effects that have the potential to occur at each recreation facility site are discussed below. Potential indirect effects include disrupted access, noise generated during construction, and changes in the visual character of the area surrounding the recreation sites.

Delta Meadows River Park

Delta Meadows

According to the California Department of Parks and Recreation website at the time the Draft EIR/EIS was prepared, the Delta Meadows River Park is closed to the public and has no visitor services. It still serves as a preserve, and is a popular mooring site among boaters. This analysis describes the park as if it is accessible to recreationists.

Components of Alternative 9 that are within or adjacent to Delta Meadows include the fish screen at the Delta Cross Channel, operable barrier on Snodgrass slough, channel connections and improvements to Meadow Slough, and the construction of permanent access roads along the border of the park, and associated work areas and potential borrow and/or spoil areas. For construction of the fish screen at the Delta Cross Channel, an approximate 18.5 acre temporary work areas would be located at the southwest corner of the park property. This area of open fields appears to receive little recreation use. Construction of the new channel connection would require the use of construction equipment, such as barges and dredges, which could cause construction noise. Construction would also degrade or reduce non-motorized boating, fishing, or wildlife viewing opportunities if wildlife avoids the area because of construction noise. Construction activity at the site of the new connection would also have adverse effects on boaters using the adjacent Meadow Slough, a popular mooring area for houseboaters and other boaters characterized by a relatively quiet, sheltered natural setting. Recreation opportunities at this site could also be affected by the use of the railroad levee road for temporary construction access during creation of the connecting channel between the navigable portion of Meadow Slough and an isolated portion of the slough to the southwest. This levee road is the primary access road into the park property and leads to a

parking area and portable restroom (when the park is open). This road is a primary walkway for visitors to the park property engaged in wildlife viewing and other activities. It also provides access to Snodgrass Slough for bank anglers. These recreational activities, if ongoing at the time of construction, would be adversely affected by construction traffic.

The levee road on the south edge of the park property would also be used for construction access. This use could disrupt the use of the levee road by recreationists for shore fishing activity, bird watching, wildlife viewing, and walking along the levee.

Brannan Island State Recreation Area

Construction of the operable gate on Threemile Slough would also result in direct effects on recreation opportunities and experiences available at Brannan Island State Recreation Area, if this area is open during project construction. A temporary construction access road is planned to be established at the south end of the State Recreation Area, generally following the route of an existing gas well access road. A temporary work area covering about 5.3 acres in the same area of the State Recreation Area would be needed. The main entrance road to the State Recreation Area would not be used for construction traffic; therefore, recreation access to the State Recreation Area would not be affected.

The southernmost portion of the State Recreation Area in the vicinity of these construction activities is primarily undeveloped grassland with informal (user-developed) trails. Fishing activity may take place along the adjacent reach of Threemile Slough. The presence of construction traffic on the gravel road and presence of construction activities in the southern portion of the State Recreation Area would effectively close these areas to this informal trail use and shoreline fishing; however, the recreation use associated with these recreation activities in the past occurred at low levels in this area, particularly on weekdays, when overall visitation to the State Recreation Area is low. Both activities would be available on the extensive areas of the State Recreation Area and its Threemile Slough shoreline that would be unaffected by construction activity.

Both land- and water-related construction activities would negatively affect the recreation setting for land-based activities because of noise and visual presence of the construction, which in turn may lead visitors to avoid the informal trails in the southern portion of the State Recreation Area and campers to select campsites away from the construction area. However, weekday camping use in the State Recreation Area (and presumably informal trail use associated with the campground at the south end of the State Recreation Area) is generally low (California Department of Parks and Recreation 2008c), and there are other informal and formal trails and more than 100 campsites available for use in other portions of the State Recreation Area. Because the nearest developed campsites are about 800 feet away from the construction site, and the undeveloped RV rally area is located about 500 feet away, both visual and noise effects on campers would be somewhat lessened.

Although the construction activities and equipment would be visible to State Recreation Area visitors using the primarily undeveloped south end of the park, the existing visual setting in the vicinity already includes electric transmission line towers (on both sides of Threemile Slough), and a communication tower with guy wires located close to the Threemile Slough Bridge.

Sherman Island

Land-based construction activities would also occur on Sherman Island, and construction traffic would use East Sherman Island Levee Road. This traffic would be focused on the road entrance

located just before Threemile Slough Bridge and on the first 500 feet of the road leading to the construction area. This road is also the main access to Outrigger Marina on Threemile Slough, about 1 mile beyond the construction site. Road access would be maintained throughout the construction period, allowing patrons of Outrigger Marina to reach the marina without delays from construction traffic or activities. In addition, adjacent landowners would still be able to access their private docks or the shoreline for recreation activities. Therefore, there would be no effect on recreation opportunities at Outrigger Marina or at private docks related to construction access to Sherman Island.

A temporary work area adjacent to the gate on Threemile Slough includes a portion of Sherman Island, which is included in CDFW's Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on State-owned lands on Twitchell and Sherman islands (California Department of Fish and Game 2009a). The 3.2-acre area on Sherman Island planned for construction is not used for recreation; therefore, temporary use of this land for construction of project facilities would not affect recreation. Construction noise and activities could affect hunting opportunities within the vicinity of the construction activities, depending on the timing of gate construction. If construction is occurring just before or during the hunt, recreation hunting near the gate construction could be degraded, depending on the volume of noise and its effect on waterfowl and pheasants. As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.16, mitigation would be available to address effects on nesting birds and waterfowl populations. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of at least 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands will also benefit sandhill crane and other species. As described above in the *Stone Lakes National Wildlife Refuge* section, implementation of CM11 would provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating. Additional habitat restoration projects would occur under an environmental commitment to remove RTM from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reuse it, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*.

Stone Lakes National Wildlife Refuge

The construction impact area associated with an access road to be built within the Cosumnes River Preserve at the southwestern corner of the Stone Lakes NWR and near Delta Meadows River Park, would result in minor noise disturbance within the Stone Lakes NWR. The access road lies within the Cosumnes River Preserve. The noise disturbance associated with constructing the access road would have no effect on limited public recreation amenities within the refuge.

Cosumnes River Preserve

The impact area encompasses a portion of the Cosumnes River Preserve in the vicinity of the Mokelumne River and east of the McCormack-Williamson Tract.

Within the Cosumnes River Preserve, the southernmost portion of the Cosumnes River Walk 3-mile nature trail passes within about one-third of a mile of the beginning of a construction access road

planned for the south levee of the Mokelumne River. The construction access road extends west from that point on Franklin Boulevard to the operable gate site on the Mokelumne River at Lost Slough. Recreation use of the Cosumnes River Walk would not, therefore, be directly affected by the project; however, the recreation experience of trail users may be affected by construction traffic noise.

Dagmar's Landing, Deckhands Marine Supply, and Landing 63

The impact area for Alternative 9 also includes three private commercial marinas; Dagmar's Landing, Deckhands Marine Supply, and Landing 63 are small marinas on the Sacramento River near Walnut Grove with a total of 12–30 berths. These marinas are on the west bank of the Sacramento River, opposite the proposed fish screen and intakes at Meadow Slough and the Delta Cross Channel. In-water work in the Sacramento River may require speed zones and access detours; however, on-water access and use of these marinas would be maintained throughout construction.

Construction activities would degrade the recreation experience for boaters using these marinas. These facilities would be directly adjacent to construction activities. Users of these facilities would likely experience undesirable boat traffic delays, congestion, and construction noise effects that would contribute to their loss of enjoyment of boating in the affected area. Environmental commitments for a water navigation plan and noise abatement plan would lessen the adverse effects on recreation experience near construction areas. However, boaters may cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location.

Walnut Grove Marina

The Walnut Grove Marina is a large facility on Snodgrass Slough near Walnut Grove with 180 berths that also offers RV campsites. On-water and vehicular access to the marina would be maintained, and use of the marina's boating facilities would not be affected by land-based construction activities. Boating, picnicking, and camping opportunities would still be available at the marina during construction; however, the recreation experience of marina users may be affected by construction activities.

Bullfrog Landing & Marina, Union Point Marina Bar & Grill, Clifton Court Forebay

The Middle River corridor encompasses Bullfrog Landing & Marina, which provides 43 berths and a small store near Railroad Cut, and Union Point Marina Bar & Grill, a restaurant and bar with a guest dock near Victoria Canal/North Canal. In the south Delta, the impact area encompasses a portion of Clifton Court Forebay and one private commercial marina, Rivers End Marina & Storage. The marina is situated on an inlet off Old River near the Tracy Fish Facility and provides a boat ramp, dry boat storage, and 13 RV campsites.

Campgrounds

Nighttime construction activities would require the use of bright lights that would negatively affect nighttime views of and from the work area. This would affect any overnight camping at the recreation sites and areas discussed above, although day use areas that close at sunset would not be adversely affected. Mitigation Measures AES-4a, AES-4b, AES-4c, and AES-4d would be available to reduce the effects of nighttime construction lighting. As discussed in Chapter 23, *Noise*, Section 23.3.3.16, another nighttime effect on recreation would be construction noise levels that could adversely affect camping or other nighttime recreation uses within up to 2,800 feet of construction areas. Nighttime construction would adversely affect camping sites. Nighttime construction would

not occur on weekends or holidays. Mitigation Measures NOI-1a and NOI-1b would be available to address these effects.

Temporary disruption of use of facilities in the impact area ranges from no effect on recreation amenities to effects relating to construction and noise, dust and degradation of the recreational setting. In the case of the sites discussed above, access to all facilities will be maintained. Environmental commitments to prepare and implement a water navigation plan and noise abatement plan would be implemented to reduce these effects. Because these effects would not be substantial and construction activities would not directly occur within these facilities, effects are not considered adverse.

Summary

Construction of Alternative 9 water conveyance facilities would result in temporary effects related to disruption of recreational opportunities and experiences in the study area during construction. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects associated with construction. Overall, construction may occur year-round and last up to 9 years; however, construction in the vicinity of identified recreation facilities would last from 1 to 6 years and in-river construction would be primarily limited to June 1 through October 31 each year.

As discussed in Chapter 12, *Terrestrial Biological Resources*, Section 12.3.3.2, construction could have an adverse effect on waterfowl if they were present in or adjacent to work areas and could result in destruction of nests or disturbance of nesting and foraging behaviors. These effects could indirectly affect recreational wildlife viewing and hunting in the study area; however, mitigation measures, environmental commitments, and conservation measures would provide several benefits to waterfowl habitat, which would result in increased recreational opportunities. Mitigation Measure BIO-75, *Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds*, would be available to address these effects. In addition, in areas near greater sandhill crane habitat, construction-related disturbances (noise and visual), installation of transmission lines, or habitat degradation associated with accidental spills, runoff and sedimentation, and dust could have adverse effects on sandhill cranes and related recreational viewing opportunities. These effects on sandhill crane would be minimized with implementation of *AMM20 Greater Sandhill Crane* and *AMM31 Noise Abatement*. These measures, designed to avoid and minimize effects on greater sandhill crane, would be implemented by the BDCP proponents where determined necessary for all covered activities throughout the permit term. These and other BDCP AMMs are detailed in BDCP Appendix 3.C, *Avoidance and Minimization Measures.* Also, as discussed in Appendix 3B, *Environmental Commitments, AMMs, and CMs,* DWR would implement an environmental commitment that would dispose of and reuse spoils, reusable tunnel material, and dredged material. Materials could be reused for purposes such as flood protection, habitat restoration, subsidence reversal. In addition, over the longer term of the action alternatives, implementation of CM3 and CM11 will result in protection and enhancement of 8,100 acres of managed wetlands (see BDCP Chapter 3, Section 3.4, *Conservation Measures*, Goal MWNC1, Objective MWNC1.1) that will provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. CM3 will also protect cultivated lands, which will benefit sandhill crane and other species. Implementation of CM11 will provide beneficial effects on recreation opportunities by allowing recreation to occur on approximately 61,000 acres of lands in the BDCP reserve system, consisting of grassland, vernal pool complex, riparian, managed wetland, and aquatic natural community types (see BDCP Chapter 4, Section 4.2.3.9.2, *Recreation*). The reserve system would

comprise more than 170 miles of trail (25 of which would be new), 4 picnic areas, 15 new trailhead facilities and one updated boating facility, as well as a new boat launch facility within the footprint of the North Delta diversion facilities. Permitted activities will include hiking, wildlife viewing, docent-led wildlife and botanical tours, bicycling, equestrian use, hunting, fishing, and boating.

Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.16, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, the BDCP proponents will work with the California Department of Parks and Recreation to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011d) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. The BDCP project proponents will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. The BDCP project proponents will also work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

As described in Chapter 19, *Transportation*, Section 19.3.3.2, Mitigation Measure TRANS-1a would involve preparation of site-specific construction traffic management plans that would address potential public access routes and provide construction information notification to local residents and recreation areas/businesses. Additionally, DWR would provide and publicize alternative modes of access to affected recreation areas as an environmental commitment. Where construction impedes access around or near existing recreation areas (e.g., Clifton Court forebay), the project proponents would provide clear pedestrian, bicycle, and vehicular routes around or across construction sites. These would be designed to be safe, pleasant and would integrate with opportunities to view the construction site as an additional area of interest. These physical facilities would be combined with public information, including sidewalk wayfinding information that would clearly indicate present and future opportunities for access. Mitigation Measure TRANS-1b would limit construction hours or activities and prohibit construction vehicle trips on congested roadway segments and Mitigation Measure TRANS-1c would implement measures to enhance capacity of congested roadway segments.

Chapter 23, *Noise*, Section 23.3.3.16, discusses that construction noise effects could be addressed through mitigation measures that call for use of noise-reducing construction practices (NOI-1a) and implementation of a complaint/response tracking program (NOI-1b), and an environmental commitment requiring a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). In addition, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities such as walking, picnicking, and viewing the aesthetic amenities of the area.

In addition to these mitigation measures and environmental commitments, Mitigation Measure REC-2 would ensure continued access to existing recreation experiences. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

***CEQA Conclusion*:** Construction of Alternative 1A intakes and related water conveyance facilities would result in temporary short-term (i.e., lasting 2 years or less) and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area, notably at Delta Meadows State Park, Brannan Island State Recreation Area, and Sherman Island, because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would be temporary, but may occur year-round. Mitigation measures, environmental commitments, and BDCP AMMs would reduce these construction-related impacts by implementing measures to protect or compensate for effects on wildlife habitat and species; minimize the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implement noise reduction and complaint tracking measures. However, the level of impact would not be reduced to less than significant because even though mitigation measures and environmental commitments would reduce the impacts on wildlife, visual setting, transportation, and noise conditions that could detract from the recreation experience, due to the dispersed effects on the recreation experience across the Delta, it is not certain the mitigation would reduce the level of these impacts to less than significant in all instances such that there would be no reduction of recreational opportunities or experiences over the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please refer to Mitigation Measure BIO-75 in Chapter 12, *Terrestrial Biological Resources*, Alternative 1A, Impact BIO-75.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Adverse changes to boat passage and navigation, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 9. Temporary channel closures may also be required that could impede boat movement. Construction of fish screens, operable gates, and boat passage facilities would include the installation of cofferdams in

the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary barge unloading facilities could also be located at the fish screens, gate sites, or spoil/dredged material storage areas. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion in high traffic areas, as could the placement of cofferdams or barge unloading facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could cause further boat traffic delays in the vicinity of the construction sites.

Conveyance Facilities—Operable Gates, Fish Screens, Dredging, and Channel Modifications

Construction of Alternative 9 conveyance facilities would result in temporary obstruction of boat passage and may cause boat traffic delays or navigation hazards to boaters.

Operable Gates and Fish Screens

On the waterways where an operable gate is planned, boat passage and navigation would be adversely affected by restriction in the width of the channels open to boat passage and in-channel obstructions during construction. Construction activities would typically include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment that would obstruct portions of the channel. For culvert siphons and operable gate sites, construction, including the installation of cofferdams, would be phased, allowing for at least half of the waterway to remain open at any one time. In this way, use of the waterway for recreational navigation would be allowed to continue during construction.

Boats would be unable to use the portion of the waterway where construction was occurring and would be required to navigate around obstructions within the channel. Effects to boat passage and navigation as a result of construction would be temporary and reduced with implementation of environmental commitments to prepare and implement a water navigation plan and provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*).

Reduced boat speed limits would be required and would be posted in the vicinity of the construction sites. Some of the gate sites are within existing speed restriction zones because of the presence of marinas and private docks.[2] Reduced speeds in areas of moderately high- or high-volume boat traffic (primarily during summer weekends) could increase congestion on the water in those areas. However, the waterways in the vicinity of the gate construction sites would remain open to boat passage at most times, and any necessary channel closures would be short-term (typically less than 1–2 days) and avoid weekends.

Boaters may be able to use alternative routes to reach their desired destinations and avoid traffic delays while passing through the construction zones. However, most detours would require traveling a considerably greater distance and may not be practical or desirable for many boaters. Because gates could be constructed in multiple locations simultaneously, alternative routes without construction activity may not be available between some destinations (e.g., between the Sacramento and Mokelumne rivers near Walnut Grove or between Old and Middle Rivers in the south Delta).

Effects on boat passage and navigation on the Sacramento River, near Locke and Walnut Grove, would be associated with construction of fish screens and intakes would be similar to the effects of

[2] State law restricts speed to 5 miles per hour when passing within 200 feet of any docks or boat mooring location.

operable gate construction. The navigation channel would be narrowed and boat speeds could be reduced in the vicinity of the fish screen and channel construction sites, but boat passage would remain open and available at most times.

The operable gate at Georgiana Slough would be built in conjunction with a fish screen across the mouth of the slough, with a boat lock. The fish screen would occupy a portion of the Sacramento River channel along the east bank of the river, restricting the width of the channel available for boat passage and potentially increasing congestion in this busy area. This could also have an adverse effect on boating recreation on this portion of the Sacramento River.

Siphons

Effects on boat passage and navigation during the construction of siphons on Old River and West Canal, on the east and west sides of Coney Island, would also be similar to the effects of operable gate construction.

Both Old River and West Canal are popular south Delta boating routes with probable high traffic volume at peak-use times. In particular, boaters use these waterways to move between access points, such as Rivers End Marina & Storage, a few miles to the south, and waterskiing and wakeboarding channels, such as Victoria Canal/North Canal and Woodward Canal, to the north. These waterways are also used by waterskiers, wakeboarders, other pleasure boaters, and anglers.

Channel Modifications

Channel connections would occur in two areas on Meadow Slough, one portion would connect a navigable portion of the slough to a non-navigable isolated portion of the slough. From the westernmost point of the slough a new channel connection would be made to the Sacramento River as part of the fish corridor. There is currently no boat passage at this point on Meadow Slough; therefore, there would be no effect on boat passage and navigation related to construction at that location.

Modification of the channel of Old River near the mouth of the Delta-Mendota Canal would involve filling in the existing channel between the Tracy Fish Facility and Fabian Tract, thereby eliminating access to and from the Rivers End Marina & Storage and connectivity between Old River and Delta-Mendota Canal. A new channel would be designed and constructed between Old River and Rivers End Marina & Storage. This channel would maintain a connection between Old River and Delta-Mendota Canal and would allow for continued access to Rivers End Marina & Storage from Old River. Although the new channel would preserve the continuity of the Old River channel north and south of the Delta-Mendota Canal, boat passage likely would be disrupted periodically during construction. Boat traffic in this area would be expected to be moderately high at peak-use times because the Rivers End Marina & Storage launch ramp and dozens of boat docks associated with private homes and cabins are in the vicinity.

Construction of the new channel would require the use of construction equipment, such as barges and dredges, which could cause construction noise. Construction activities would also degrade or reduce fishing or wildlife viewing opportunities if wildlife avoids the area because of construction noise. The effects on fishing, hunting, or wildlife viewing opportunities in the vicinity of the construction from noise would be temporary, but long-term, lasting up to 9 years.

Dredging Activities

Dredging activities are proposed on the Middle River between Empire Cut and Victoria Canal and in Victoria Canal/North Canal. Dredging in these waterways would require the establishment of safety zones around the dredge while it is in operation. The dredge and any associated barges or pipeline used for sediment disposal would be marked with signage and lights as required by U.S. Coast Guard regulations. Dredging on narrow reaches of the Middle River channel and on Victoria Canal/North Canal may require temporary closure of the channel in the vicinity of the dredge. A side channel that would not be dredged would be available alongside most portions of the reach of Middle River to be dredged, which would allow unimpeded boat passage. Similarly, the parallel channels of Victoria and North Canals, each about 200 feet wide, would allow continued boat passage at most times because the dredger would be used on only one side of the waterway at a time. However, closure or other limitation of one side of the waterway will interfere with the waterskiing activity here, where each channel is informally regarded as "one way."

The dredging on Middle River and Victoria Canal/North Canal also would require the construction of barge unloading facilities at two locations on Middle River and one location on North Canal (Mapbook Figure M15-5). The facilities would be used to transfer dredged material to spoil sites and would be removed after construction was completed. On Middle River, the barge unloading facilities would occupy about 850 feet of the west bank of the river, at a site about 0.5 mile north of Railroad Cut and a similar portion of the east bank of the river at a site about 1 mile south of Woodward Cut. At the site north of Railroad Cut, the river splits into two channels around a large, vegetated island, and the west channel is about 400–500 feet wide. Although the barge facility and operations would occupy part of the channel and would restrict boat passage, boat traffic could continue to use the west channel and could also use the east channel, which would be unobstructed and which is not subject to dredging. At the site south of Woodward Cut, the river also splits into two channels around a large, vegetated island, but the east channel is only about 200 feet wide. Therefore, the barge unloading facility and barge operations at this location could occupy a substantial portion of the east channel of the river, constricting or preventing boat passage in that channel. The 200- to 250-foot-wide west channel would be unaffected and would continue to permit unobstructed boat passage. However, peak boat traffic volume is high at this location. Because all or most boat traffic would be confined to the west channel by the barge unloading facility and barge operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

On North Canal, the barge unloading facility would occupy about 1,200 feet of the north bank of the canal, at a site about 1 mile west of Middle River. The canal is about 150–200 feet wide at this location. Therefore, the barge unloading facility and barge operations at this location could occupy a substantial portion of the canal, constricting or preventing boat passage. The parallel and similarly sized Victoria Canal would be unaffected by the barge unloading facility and would continue to permit unobstructed boat passage, although dredging activity would occur in both canals. Peak boat traffic volume is high at this location. Because all or most boat traffic would be confined to Victoria Canal by the barge unloading facility and barge operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

Temporary Barge Unloading Facilities

Temporary barge unloading facilities may be located adjacent to four of the operable gate construction sites: Fishermen's Cut at San Joaquin River, Old River at San Joaquin River, Railroad Cut at Middle River, and Woodward Cut at Middle River. The facilities would be used to transfer

operable gate construction equipment and materials to and from the gate sites and would be removed after construction is completed. At the Fishermen's Cut and Old River gate sites, the barge unloading facilities would be built on the San Joaquin River and would occupy about 800 feet of the riverbank. In both of these locations, the San Joaquin River is about 0.5-mile wide. Therefore, the barge unloading facilities and the barges using them would temporarily occupy a relatively small portion at one side of the channel.

Similar barge unloading facilities would be built on Middle River, immediately south of the Railroad Cut and Woodward Cut gate construction sites. The facilities would be used to transfer operable gate construction equipment and materials to and from the gate site and to transfer dredged material to spoil sites. The facilities would be removed after construction is completed. These facilities would occupy about 1,100 feet and 900 feet, respectively, of the riverbank in those areas. The Middle River in both locations is about 600–650 feet wide and is characterized by a split channel, with a vegetated island in the middle of the river. The barge unloading facilities and barge operations at these two locations could occupy a substantial portion of the west channel of the river, constricting or preventing boat passage in that channel. At both locations the 150- to 200-foot-wide east channel would be unaffected and would continue to permit unobstructed boat passage. However, peak boat traffic volume is high at these locations. Because all or most boat traffic would be confined to the east channel by the barge facility and barge unloading operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends) at these locations.

Adverse direct and indirect effects on boat passage and navigation and associated recreational activities such as waterskiing and wakeboarding would occur as a result of construction of the conveyance facility features. Boats would be unable to use the portion of the waterways where construction was occurring and would be required to navigate around obstructions within the channel and observe speed restrictions. Mitigation Measure TRANS-1a would be available to reduce effects to marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. Additionally, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. For the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This mitigation serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. *CM13 Invasive Aquatic Vegetation Control* provides for the control of egeria, water hyacinth, and other IAV throughout the Plan Area. However, the BDCP proponents would also commit to partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce

expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

CM13 Invasive Aquatic Vegetation Control and the environmental commitments would create and rehabilitate alternative recreation opportunities for those eliminated during construction. BDCP proponents would also ensure through various outreach methods that recreationists were aware of nearby recreation opportunities for similar water sports (e.g., Victoria Canal, Empire Cut or Bishop Cut). Nonetheless, these effects would be long-term, lasting approximately 5 years and would be considered adverse because of the reduced recreation opportunity and experiences expected to exist near construction activity.

***CEQA Conclusion*:** Significant impacts on boat passage and navigation and associated recreational activities such as waterskiing and wakeboarding would occur as a result of construction of the conveyance facility features of Alternative 9. In areas where construction is occurring, boats would be unable to use the portion of the waterways and be required to navigate around obstructions within the channel and observe speed restrictions. Mitigation Measure TRANS-1a would reduce impacts on marine navigation by development and implementation of site-specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of proposed barge operations in the waterways. While the environmental commitments would reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, these impacts would be long-term and therefore considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

***NEPA Effects*:** Effects on recreational fishing under Alternative 9 would be similar to those described under Alternative 1A, Impact REC-4. As discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.16, Sacramento River and Delta region fish populations would not be affected by changes to localized water quality conditions, underwater noise, fish stranding or other physical disturbances, or reduced habitat areas such that recreational fishing opportunities would be substantially reduced during construction. BDCP environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). RTM would be removed from

RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Mitigation Measures AQUA-1a and AQUA-1b would be available to avoid and minimize adverse effects on sport fish populations from impact pile driving. However, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers. Although fish populations likely would not be affected to the degree that fishing opportunities would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

While construction noise would be temporary, and primarily be limited to Monday through Friday, it would be ongoing for up to 24 hours per day and for up to 5 years near individual work sites. Visual setting disruptions could distract from the recreation experience including on weekends. However, Mitigation Measures NOI-1a and NOI-1b would address construction noise effects. Additionally, specific noise-generating activities near recreation areas would be scheduled to the extent possible so as to avoid effects on passive recreation activities on-shore fishing. Mitigation measures would also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). Overall, construction of the proposed water conveyance facilities would not degrade the fishing experience for boat and on-shore fishing locations. Additionally, anglers could move to other locations along the Sacramento River and throughout the Delta region and REC-2 would provide anglers with alternative bank fishing access sites further removed from areas affected by construction. Therefore, construction of the proposed water conveyance facilities would not result in a long-term reduction of fishing opportunities. This effect would not be adverse.

***CEQA Conclusion*:** The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, RTM, and dredged material; and a barge operations plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) and Mitigation Measures AQUA-1a and AQUA-1b to avoid and minimize adverse effects on sport fish populations from impact pile driving. Mitigation Measure REC-2 would ensure continued access for bank fishing at established sport fishing locations such that there would be no long-term reduction of local fishing opportunities and experiences. This impact would be less than significant.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please refer to Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 1A.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Operation of Alternative 9 may result in changes in entrainment, spawning, rearing and migration. However, in general, effects on (non-covered) fish species that are popular for recreational fishing as a result of these changes are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts to specific non-covered species, as discussed in Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.16, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 9 would be considered less than significant because any impacts to fish and, as a result, impacts to recreational fishing, are anticipated to be isolated to certain areas and would not impact the species population of any popular sportfishing species overall.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

***NEPA Effects*:** Operation of Alternative 9 would result in changes in the frequency with which the end of September reservoir levels at study area reservoirs fall below levels identified as important water-dependent recreation thresholds relative to Existing Conditions (CEQA baseline) and the No Action Alternative (2060) (alternative operations contribution [impact] comparison) (Table 15-12a and Table 15-12b). These changes are discussed below. Also see Chapter 3, *Description of Alternatives*, Section 3.6.4.2, for detailed information on the operational scenarios, and Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*, for an explanation of the CALSIM II model and assumptions.

Existing Conditions (CEQA Baseline) Compared to Alternative 9 (2060)

As shown in Table 15-12a and Table 15-12b, under Alternative 9 there would be from 3 to 26 additional years of the recreation thresholds being exceeded at the reservoirs relative to the existing

condition. These represent a greater than 10% increased exceedance of the reservoir thresholds at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and San Luis Reservoir. However, as discussed under Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are caused by sea level rise, climate change, and operation of the alternative. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and Alternative 9 cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (2060) to Alternative 9 (2060) for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 9.

No Action Alternative (2060) Compared to Alternative 9 (2060)

The comparison of Alternative 9 (2060) to the No Action Alternative (2060) condition most closely represents changes in reservoir elevations that may occur as a result of operation of the alternative because both conditions include sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*).

In comparisons of Alternative 9 (2060) operations to No Action Alternative (2060), the CALSIM II modeling results indicate that reservoir levels under Alternative 9 operations, with the exception of Lake Oroville and San Luis Reservoir, would fall below the individual reservoir thresholds less frequently than under No Action Alternative (2060) (Table 15-12a and Table 15-12b). At Lake Oroville, the modeling indicates there would be three additional years in which recreation thresholds may be exceeded. This is a less than 10% change. These changes in reservoir elevations would not be adverse at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Lake. At Trinity Lake, Shasta Lake, Folsom Lake, and New Melones Lake these changes would be considered beneficial effects on recreation opportunities and experiences under Alternative 9 operations because there would be fewer years in which the lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions. Operation of Alternative 9 would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 9 because there would be fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (2060) conditions.

At San Luis Reservoir, recreation boating opportunity in September would be reduced more frequently under Alternative 9 (2060) (20 years) relative to No Action Alternative (2060) for the Dinosaur Point boat launch. However, access to the Basalt boat launch, which is available to reservoir elevation 340 feet, would not substantially change relative to the No Action Alternative (2060) (there would be five additional years below the threshold). This is a less than 10% change and would not result in a substantial reduction in recreation opportunities or experiences. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. These changes would not be adverse.

***CEQA Conclusion*:** This impact on water-dependent and water-enhanced recreation opportunities at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and New Melones Reservoir would be less than significant because the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 9 (2060) operations would either result in a less than 10% change (Lake Oroville) or would fall below the individual reservoir thresholds less frequently than under No Action

Alternative (2060). Because overall there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (2060) conditions, these impacts would be considered beneficial impacts on recreation opportunities and experiences. At San Luis Reservoir, although boating opportunity would be reduced more frequently for the Dinosaur Point boat launch, access to the Basalt boat launch would not substantially change. The modeling indicates there would be five additional years when reservoir elevations would exceed the recreation threshold under operation of Alternative 9 (2060) relative to the No Action Alternative (2060). This would be a less than 10% change and would be less than significant. Operation of Alternative 9 would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. Overall, Alternative 9 would result in a less-than-significant impact on recreation opportunities and experiences. No mitigation is required.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Maintenance activities, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment, could have a minor effect on boat passage and in the waterways where operable barriers, intakes and fish screens are installed. Repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of boat traffic in the immediate vicinity of the affected structure and reduce opportunities for waterskiing, wakeboarding and tubing in the immediate vicinity of the structures. However, boat passage and navigation would still be possible around any barges or other maintenance equipment and these effects would be expected to be short-term (2 years or less).

Maintenance of Alternative 9 facilities would result in temporary, but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. Implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would reduce these effects. These effects are not considered adverse.

***CEQA Conclusion*:** Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. In addition, implementation of the environmental commitment to provide notification of maintenance activities in waterways (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) would further minimize these effects. Maintenance impacts on recreation would be considered less than significant because impacts, if any, on public access or public use of established recreation facilities would last for 2 years or less. No mitigation is required.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

***NEPA Effects*:** Maintenance activities for the conveyance facilities may include painting, landscaping, equipment replacement, and mechanical repairs that would be short-term and intermittent and would not affect recreation opportunities. Maintenance activities for these facilities would occur within the individual facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities.

Maintenance activities would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of Alternative 9 facilities.

***CEQA Conclusion*:** Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to recreational opportunities. Therefore, there would be no impact. Mitigation is not required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Construction, and operation and maintenance of the proposed conservation components as part of Alternative 9 could have effects related to recreational fishing that are similar in nature to those discussed above for construction, and operation and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation components would be different—less heavy construction equipment would be required and the restoration actions would be implemented over a longer time frame than CM1. Potential effects from implementation of the conservation components would be dispersed over a larger area and would generally involve substantially fewer construction and operation effects associated with built facilities. Additionally, overall, the habitat restoration and enhancement components would be expected to result in long-term benefits to aquatic species. Additional discussion related to the individual conservation measures is provided below.

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 9 would be similar to those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities. CM2–CM21 would be expected to improve fishing opportunities in the study area although some effect on fishing opportunities could take place during implementation of the conservation measures. Overall, implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance thereby improving fishing opportunities.

***CEQA Conclusion*:** CM2–CM21 in the long-term would be expected to improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; controlling illegal harvest of covered species; and expanding boat launch facilities. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. CM2 would increase the floodplain footprint in the Yolo Bypass Wildlife Area, which would result in decreased onshore fishing opportunities. These impacts would be considered less than significant because the BDCP would include environmental commitments to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). CM4, CM13, and CM15 target predator fish species and although these CMs would result in highly localized reductions of predatory species, overall, these measures would not result in an appreciable decrease in Delta-wide abundances of predatory game fish (refer to Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.16). Construction of facilities could have short-term impacts on the noise or visual setting and could indirectly affect recreational fishing. The potential impact on covered and non-covered sport fish species from construction activities would be considered less than significant because the BDCP

would include environmental commitments to prevent water quality effects include environmental training; implementation of stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; disposal of spoils, and dredged material; and a barge operations plan (Appendix 3B). In addition, mitigation measures and environmental commitments identified to reduce the effects of constructing CM1 would also be used to minimize effects of construction on recreation (i.e., visual conditions, noise, transportation/access) associated with implementation of the other conservation components. Because construction of the conservation measure component facilities would be less intense and of shorter duration than construction of CM1 conveyance facilities, the mitigation measures and environmental commitments would reduce the construction-related impacts on recreational fishing associated with the other conservation measures to a less-than-significant level. Further, the individual facilities or conservation elements will undergo additional environmental review and permitting which will include identification of site-specific measures to further protect resources.

Environmental commitments that will reduce construction-related impacts on recreation include a noise abatement plan and consultation with CDFW to expand recreational opportunities (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above). In addition, a number of mitigation measures will address construction-related impacts on recreational fishing by reducing the degree of aesthetic and visual degradation at construction sites (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions that could affect public use of recreation areas (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.16). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.16). Finally, should construction of conservation measure facilities require pile-driving, mitigation measures to protect fish and aquatic species would be implemented to reduce these impacts (see additional discussion under Impact REC-4, above and Chapter 11, *Fish and Aquatic Resources*, Section 11.3.4.16).

In the long term, the impact on fishing opportunities would be considered beneficial because the conservation measures are intended to enhance aquatic habitat and fish abundance.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure AQUA-1a: Minimize the Use of Impact Pile Driving to Address Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1a in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Mitigation Measure AQUA-1b: Monitor Underwater Noise, and if Necessary, Use an Attenuation Device to Reduce Effects of Pile Driving and Other Construction-Related Underwater Noise

Please refer to Mitigation Measure AQUA-1b in Chapter 11, *Fish and Aquatic Resources*, Alternative 1A, Impact AQUA-1.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 9 would be similar to those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities. Implementing the conservation measures could result in an adverse effect on recreation by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could provide beneficial effects to recreation by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this would not be an adverse effect.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related effects on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures are available to address construction-related effects on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c are available to address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.16). Mitigation Measures NOI-1a and NOI-1b are available to address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.16).

***CEQA Conclusion*:** Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures and other conservation measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is considered less than significant for the conservation measures, with the exception of CM18, discussed further below.

Under CM18, construction of a genetic refuge and research facility at the former Army Reserve base near the Delta Marina Yacht Harbor could result in construction-related impacts on boaters at this site. The BDCP proponents would implement environmental commitments to include a noise abatement plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*; also see additional discussion under Impact REC-2 and Impact REC-3, above) to lessen these impacts. In addition, a number of mitigation measures address construction-related impacts on recreational boating by reducing the degree of aesthetic and visual degradation at the construction site (see Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.2, Mitigation Measures AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4b, AES-4c, and AES-4d; also see additional discussion under Impact REC-2 and Impact REC-3, above). Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-1c address traffic and transportation safety and access conditions of the marina (see additional discussion under Impact REC-2 and Impact REC-3, above, and Chapter 19, *Transportation*, Section 19.3.3.16). Mitigation Measures NOI-1a and NOI-1b address construction-related noise concerns (see additional discussion under Impact REC-2 and Impact REC-3, above and Chapter 23, *Noise*, Section 23.3.3.16). Implementation of these measures, as determined applicable to construction of this facility under future site-specific environmental review, would reduce impacts on recreational boating to a less-than-significant level. No additional mitigation would be required.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-1.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please refer to Mitigation Measure TRANS-1a in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1b in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please refer to Mitigation Measure TRANS-1c in Chapter 19, *Transportation*, Alternative 1A, Impact TRANS-1.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to Mitigation Measure NOI-1a in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to Mitigation Measure NOI-1b in Chapter 23, *Noise*, Alternative 1A, Impact NOI-1.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing CM2–CM21

***NEPA Effects*:** Implementing the conservation components under Alternative 9 would have similar effects on upland recreation activities as those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities. Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites suitable for hiking, nature photography, or other similar activities. However, environmental commitments would reduce these effects, and implementation of the conservation measures also could provide a benefit to recreation from improved quality of upland recreation opportunities. CM17–CM21 involve enforcement, management, or other individual, localized project components that would not affect upland recreation opportunities. CM17 is an enforcement funding mechanism and would not result in a physical change to upland areas; construction under CM18,

CM19, or CM21 would not affect existing upland recreation areas; and CM20 is an enforcement action primarily located at boat launches and would not affect upland recreation areas and related opportunities. These measures are not discussed further in this analysis.

***CEQA Conclusion*:** Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. These impacts on upland recreational opportunities would be considered less than significant because the BDCP would include environmental commitments that would require BDCP proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

***NEPA Effects*:** Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 9 could result in the potential for incompatibilities with plans and policies related to protecting recreation resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues as overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 9 is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 9 on recreation resources is addressed in Impacts REC-1 through REC-11, and in other chapters such as Chapter 23, *Noise*, Section 23.3.3.16, and Chapter 17, *Aesthetics and Visual Resources*, Section 17.3.3.16. The following is a summary of compatibility evaluations related to recreation resources for plans and policies relevant to the BDCP.

The *New Melones Lake Area Final Resource Management Plan, Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area, General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, Folsom Lake State Recreation Area General Plan, Lake Oroville State Recreation Area Resource Management Plan and General Development Plan,* and *San Luis Reservoir State Recreation Area General Development Plan* all have policies or goals to protect the recreation resources and promote a range of opportunities to visitors to these areas. Construction and operation of the proposed water conveyance facilities and other conservation measures would not affect recreation opportunities in these areas and would be compatible with these plans.

The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Delta Protection Act), *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan,* and *Brannan Island and Franks Tract State Recreation Areas General Plan* are all focused on the protection of resources, including recreation resources, within the Delta. These plans have policies, objectives, or goals intended to protect and enhance existing recreation and encourage development of new local and regional opportunities. Constructing the proposed conveyance facilities would result in long term disruption to existing established recreation areas in the study area and change the nature of the recreation setting. The proposed water conveyance elements could be considered incompatible with measures to protect existing recreation opportunities in the study area.

The Delta Protection Act, the Delta Protection Commission's Great California Delta Trail System, and the *Great California Delta Trail Blueprint Report for Contra Costa and Solano Counties* all promote development of a regional trail system providing a continuous regional recreational corridor to provide bikeways and hiking trails. The BDCP proponents would work with these regional and local efforts to design proposed restoration areas to be compatible with and complement the goals of creating a regional trail network and where feasible to adapt restoration proposals to incorporate recreational amenities and opportunities in these areas.

Regional plans and those geared toward the management of specific areas, including the *Stone Lakes National Wildlife Refuge CCP, Cosumnes River Preserve Management Plan, Brannan Island and Franks Tract State Recreation Areas General Plan, Yolo Bypass Wildlife Area Land Management Plan, the Yolo County General Plan, Lower Sherman Island Wildlife Area Land Management Plan, San Francisco Bay Plan, Suisun Marsh Protection Plan,* and *Solano County General Plan Suisun Marsh Policy Addendum* are primarily designed to preserve and enhance the natural resource and recreation qualities of these areas. Implementing the BDCP alternatives may create disruptions related to facility and restoration improvements. Proposed restoration areas in the Yolo Bypass, on Sherman Island, and in Suisun Marsh would be designed to be compatible with and complement the current management direction for these areas and would be required to adapt restoration proposals to meet current policy established for managing these areas.

The BDCP would be constructed and operate in compliance with regulations related to boat navigation jurisdiction, rules, and regulations enforced by local, state (including the California Department of Parks and Recreation's Division of Boating and Waterways), and federal (including the U.S. Coast Guard) boating law enforcement. The alternative would be compatible with California State Land Commission regulations related to recreational piers or marinas.

EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2012b). Recreation at these parks would not be affected by this alternative.

Alternative 9 would result in the construction of permanent and temporary features associated with the proposed water conveyance facility across land governed by the general plans of Sacramento, San Joaquin, Contra Costa, and Alameda Counties. The county general plans all have policies related to the protection of recreation resources and encourage the development of new water-based and land-based recreation opportunities. Sacramento and San Joaquin Counties recognize the Delta as an area of international importance and as a major recreational resource of these counties. Construction activities that disrupt and degrade recreation opportunities in the study area would be incompatible with policies designed to protect recreation resources, including those intended to

protect open space and natural areas and those that discourage development of public facilities and infrastructure unless it is related to agriculture, natural resources and open space, and has recreational value. Alternative 9 would not be incompatible with Yolo County and Solano County policies because conveyance facilities would not be located in these areas.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in impacts REC-1 through REC-11, above and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

Impact REC-13: Permanent Alteration of Recreational Boat Navigation as a Result of Operating the Water Conveyance Facilities

***NEPA Effects*:** With operation of Alternative 9, boat passage and navigation would be affected to varying degrees at each of the 14 waterway locations where an operable gate is planned. Table 15-17 lists the affected waterways associated with each type of conveyance facility. Boat passage would be unavailable at three waterway locations where a fish screen or an operable gate without a boat passage facility would be constructed and no boat passage would be provided. Boats would be able to pass the Threemile Slough operable gate when it is open; passage here would be restricted for several hours twice per day. Boat passage would be unimpeded at the two locations where siphons are planned to cross beneath the waterway.

Table 15-17. Waterways Affected by Construction and Maintenance of Alternative 9 Conveyance Facilities

Type of Conveyance Facility and Waterway Location
Operable Gate with Boat Passage Facility
Mokelumne River downstream of Lost Slough
Snodgrass Slough upstream of Delta Cross Channel
Georgiana Slough at Sacramento River
Connection Slough at Middle River
Railroad Cut at Middle River
Woodward Canal at Middle River
Fishermen's Cut at San Joaquin River
Old River at San Joaquin River
Meadow Slough
Victoria Canal at Old River
Operable Gate without Boat Passage Facility—Boat Passage When Gate Open
Threemile Slough near Sacramento River
Fish Screen and Operable Gates without Boat Passage
Delta Cross Channel at Sacramento River (Fish Screen)
San Joaquin River downstream of Old River
Middle River upstream of Victoria Canal
Dredging/Channel Reconfiguration
Middle River between Empire Cut and Victoria Canal (Dredging)
Victoria Canal/North Canal (Dredging)
Old River at Delta-Mendota Canal (Reconfigured Channel)

Boat navigation could be enhanced by dredging on the two waterways where dredging and realignment of Old River are planned.

Operable Gates with Boat Passage Facilities

At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway but would instead be required to stop at the gate and wait to be directed through the boat passage facility. Wait times could be greater than 30 minutes at locations where boat traffic volume is high particularly during peak-use. For example, summer weekend and holiday boat traffic at the Old River gate site was in the range of 250–400 boats per day and at the Snodgrass Slough and Railroad Cut gate sites was in the range of 150–300 boats per day. Summer weekend afternoon boat traffic at these sites was as high as 50–80 boats per hour. If estimated increases in boat traffic between 2010 and 2020 occur and continue beyond 2020 into the early long-term period, wait times at planned boat passage facilities could be longer than 30 minutes. (Plater and Wade 2002)

The rate at which boats could be passed through the passage facility would depend in part on the capacity of the passage facility chamber and other design factors. The skill of boat drivers at negotiating the passage facilities and the diversity of boat types and sizes using the facilities would also be factors in determining traffic flow and thus length of delays. Some of the high-traffic sites also host a wide variety of boat types, with numerous large boats. Wait times would be expected to be short at locations where boat traffic volume is low. At gate locations where boaters would be delayed longer than 30 minutes, there would be an adverse effect on boating recreation.

A new connection for boaters would be created with the construction of a channel and boat passage facility between the navigable portion of Meadow Slough and the Sacramento River. When the Delta Cross Channel gate is closed, the expectation would be that most of the traffic that now uses the Delta Cross Channel would be transferred to this location. This new connection may become the preferred route between the Sacramento River and Meadow Slough, Snodgrass Slough, and the Mokelumne River when the Delta Cross Channel is closed.

Operable Gates without Boat Passage Facilities

At Threemile Slough, an operable gate would be installed without a boat passage facility but where boats would be able to pass the gate when it was open. The gate would operate tidally which means that the gate would be closed on the incoming or outgoing tides, depending on the operational objective (fish migration control or salinity control) taking precedence at the time. In either mode of operation, the gate would be closed for several hours twice per day, prohibiting boat passage.

No other practical route exists between this reach of the Sacramento River and the San Joaquin River. If Threemile Slough were closed to boat passage, boaters wanting to travel between the Sacramento River and the San Joaquin River would be required to make a detour of 20 miles to the west around Sherman Island.

Many of the boats using Threemile Slough are launched from the Brannan Island State Recreation Area boat launch, 1 mile east of the planned gate site. In addition, Outrigger Marina, on the opposite bank of Threemile Slough from the State Recreation Area, draws a portion of its restaurant and fuel dock patrons from the Sacramento River, and the Sacramento River is a destination for many of the boats berthed at the marina. When the gate is closed, boaters would be unable to travel to or from these locations and the Sacramento River.

Threemile Slough on the Sacramento River side of the gate does not provide space sufficient for a large number of boats to wait for the gate to open, and the Sacramento River in this area has strong winds and currents, making it an unsuitable place for most boats to moor. For these reasons, this change in boat navigation would have an adverse effect on boating recreation.

Operable Gates without Boat Passage Facility and No Boat Passage

The fish screen and modified gate without boat passage at the Delta Cross Channel would eliminate boat access between the Delta Cross Channel and the Sacramento River because modifications would lack provisions for boat passage. In combination with the closure of the gate at the new connecting channel between the Sacramento River and Meadow Slough, 0.75 mile upstream, this gate would eliminate the ability for most boaters to travel between this reach of the Sacramento River and Snodgrass Slough, Meadow Slough, or the Mokelumne River.

The fish screen would occupy a portion of the Sacramento River channel along the east bank of the river, restricting the width of the channel available for boat passage and potentially increasing congestion in this area. For these reasons, this change in boat navigation would have an adverse effect on boating recreation.

Because the Delta Cross Channel would no longer provide boat passage with implementation of this alternative, the new Meadow Slough channel would become the preferred route between the Sacramento River and Meadow Slough, Snodgrass Slough, and the Mokelumne River. The expectation would be that most of the traffic that now uses the Delta Cross Channel would be transferred to the new Meadow Slough channel.

San Joaquin River at Old River

The operable gate planned for the San Joaquin River north of the head of Old River would prevent boaters who launch at downstream locations on the San Joaquin River from traveling on the San Joaquin River beyond Old River or into Old River because no boat passage would be provided. Dos Reis Park launch ramp is 2.5 miles downstream, and the Haven Acres Resort boat ramp and guest dock are 4 miles downstream. The nearest marinas and boat ramps in the Stockton area are more than 13 miles downstream.

The gate would prevent boaters navigating from upstream areas of the San Joaquin River or from Old River from moving downstream beyond the gate. The Mossdale Crossing Park boat ramp and the Mossdale Marina guest dock are located about 2.5 miles upstream on the San Joaquin River.

Boat traffic volume at this location appears to average about 100 boats per day during weekends and holidays based on surveys conducted by DWR in the 1990s (California Department of Water Resources and Bureau of Reclamation 2005). However, given the relatively few ramps, marinas, or other boating facilities or uses in the vicinity and the availability of many unimpeded miles of the San Joaquin River and Old River available to boaters on either side of this gate, this change in boat navigation would not have an adverse effect on boating recreation.

Middle River Upstream of Victoria Canal

The operable gate planned for Middle River just upstream of Victoria Canal would primarily prevent boaters navigating from downstream on Middle River and waterways connecting Middle and Old Rivers from traveling farther upstream because no boat passage would be provided. The only boating facility in the vicinity is the Union Point Resort, about 0.5 mile downstream, which has a

restaurant and bar with guest dock but no boat berthing. Boat traffic volume at this location is light, with fewer than 20 boats per day observed during surveys conducted by DWR in the 1990s (California Department of Water Resources and Bureau of Reclamation 2005).

A few miles upstream of the gate site, the waterway becomes increasingly narrow and shallow, which limits use to small fishing boats and nonmotorized boats (e.g., canoes and kayaks). Boaters may access this reach of Middle River from upstream by launching at a county park ramp on the San Joaquin River. In addition, since 1987, DWR has installed a temporary rock barrier at this location from May through September of each year. No boat passage is provided at the rock barrier. Therefore, boat passage is blocked each year throughout the primary summer boating season, as well as during part of the spring and fall seasons. Because of the low level of boating activity on this reach of Middle River, the availability of public launch sites upstream, and the seasonal nature of the effect, placement of the operable gate planned for Middle River just upstream of Victoria Canal effect on recreation would be minor.

Dredging and Channel Reconfiguration

Dredging is planned for Middle River between Empire Cut and Victoria Canal, a distance of about 7 miles. Studies to date of Railroad Cut at Middle River and on Victoria Canal/North Canal (immediately south of the dredging area, and the probable source or destination for much of the Middle River boat traffic in this area) indicate that weekend and holiday boat traffic volume on this reach of Middle River is high. Although the dredging is not intended to widen the channel, the deepening of the channel would eliminate shallow areas and reduce areas where aquatic vegetation could become established. This would have a beneficial effect on boat navigation.

Dredging is also planned for the length of Victoria Canal/North Canal, terminating at the operable gate at the west end of the canals. The dredging would eliminate the narrow, vegetated berm that separates the two canals for much of their lengths. Boaters may consider the berm separating the two canals to be desirable because it provides a separation for the boat traffic on the two canals and facilitates the normal traffic pattern whereby eastbound traffic uses North Canal and westbound traffic uses Victoria Canal. The berm also serves to reduce boat wakes from traffic on the adjacent canal, which improves waterskiing conditions. However, the widening and deepening of the waterway could have a beneficial effect on boat navigation by creating a less restrictive channel and discouraging aquatic vegetation growth. Overall, loss of the central berm from the dredging would have an adverse effect on boating recreation.

Reconfiguration of the Old River channel at the mouth of the Delta-Mendota Canal inlet is planned to close off the inlet from Old River (the inlet would receive water from Clifton Court Forebay via a new canal). The inlet would be blocked by fill between the Tracy Fish Facility and Fabian Tract and between Fabian Tract and the tract south of Clifton Court Forebay. A new Old River channel would be cut across the tip of Fabian Tract. This new channel would allow boaters to continue to pass between the Rivers End Marina & Storage and numerous cabins and docks near the marina and Old River to the north of Fabian Tract. Two small islands with cabins and boat docks located in the area to be filled would be eliminated by the channel reconfiguration, and a wider channel between the Rivers End Marina & Storage inlet and Old River would be created. The effect on boat recreation would be beneficial.

Changes in Flow Velocity during Gate Operations

Effects from the operation of operable gates would result in a substantial change and reduction of use of established recreational activities. At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway. At locations where an operable barrier is proposed without boat passage, boaters would lose access to waterways typically traveled. Mitigation Measures REC-14a and REC-14b would be available to reduce these effects.

As discussed under Impact REC-3, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. For the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users.

BDCP would also contribute funds to further the DBW's aquatic weed control programs in the Delta. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Because of the permanent loss of boat passage and navigation and the delays associated with operable gates, these effects are considered adverse.

***CEQA Conclusion*:** Impacts from the operation of operable gates would result in a substantial change and reduction of use of established recreational areas and activities. At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway. At locations where an operable barrier is proposed without boat passage, boaters would lose access to waterways typically traveled. These effects would be reduced with the implementation of Mitigation Measure REC-13a and Mitigation Measure REC-13b as well as other commitments made by the BDCP proponents, but not to a less-than-significant level. Therefore, these effects would be considered significant and unavoidable.

Mitigation Measure REC-13a: Minimize Congestion at Passage Facilities

To reduce the impacts on boater's recreation experiences and to facilitate boat passage at the gate locations, the following will be implemented at the time of gate construction.

- Boat passage facilities will be designed to accommodate the average peak number of boaters and the range of boat types that use the affected waterway and minimize wait times.
- To provide for a safe and convenient place to wait for the gate to open, floating docks, each 200 feet long and 12 feet wide, will be provided along the shoreline on each side of the boat

passage facility to provide boaters a location to wait and use the facility. Mooring bits will be provided on the docks. Boaters may also choose to wait in the channel on either side of the gate.

Mitigation Measure REC-13b: Implement Boater Information and Education Program on Operation of Barriers and Boat Passage Facilities

Before and during project operation, a boater information program will be implemented to provide information and details on the locations and operation of barriers throughout the study area. The program will include education on the three types of barriers (with boat locks, without boat locks, and the Threemile Slough barrier which would be passable when it is not operating). Boaters will be informed of typical timing of gate operations (as in the case of Threemile Slough operable barrier), potential alternative navigation routes during closures, and on procedures for waiting and using the boat passage facilities. This program will use a variety of printed media (e.g., posters, brochures) to provide the necessary information, and the media will be displayed and distributed at publicly accessible boat access facilities, including public and commercial boat ramps and marinas in the study area. The information will also be provided for dissemination on the websites of public recreation and boater safety organizations and agencies (e.g., DPR, CDBW, CDFW, U.S. Coast Guard, marine patrol agencies). Additional means of dissemination, such as distribution of materials or presentations at public meetings and events hosted or participated in by these organizations and agencies, will be used when the opportunity arises.

Impact REC-14: Substantial Reduction in Other Recreation Opportunities as a Result of the Operation of the Water Conveyance Facilities

***NEPA Effects*:** Permanent speed zone restrictions in the vicinity of operable gate and boat passage facilities would include speed limits that could adversely affect high-speed recreation opportunities, such as waterskiing, wakeboarding, and tubing, to the point they would be effectively eliminated. Table 15-18 presents the waterways where recreation would be affected. Railroad Cut, Woodward Cut, and Victoria Canal are popular wakeboarding and waterskiing destinations.

Table 15-18. Waterways where Recreation would be Affected by Operation and Maintenance of Alternative 9 Conveyance Facilities (Early Long-Term)

Type of Conveyance Facility and Waterway	Primary Boating Activity
Operable Gate with Boat Passage Facility	
Railroad Cut at Middle River	Waterskiing and Wakeboarding
Woodward Canal at Middle River	Waterskiing and Wakeboarding
Operable Gate without Boat Passage Facility—Boat Passage when Gate is Open	
Meadow Slough	Mooring
Threemile Slough near Sacramento River	Cruising (Pass-through Traffic)
Fish Screen and Operable Gates without Boat Passage	
Victoria Canal at Old River	Waterskiing and Wakeboarding

Source: California Department of Parks and Recreation's Division of Boating and Waterways 2003.

At Brannan Island State Recreation Area, the gate on Threemile Slough and associated structures and access roadway would require construction on State Recreation Area lands located along the Threemile Slough waterway. The location of the operable gate at Threemile Slough is in a primarily undeveloped portion of the State Recreation Area where recreational use is low. In addition, only a small percentage of the approximately 1-mile-long State Recreation Area shoreline on Threemile Slough would be affected. The portion of shoreline affected is the most distant from developed campsites, where most informal use in the undeveloped area is likely to originate.

Other than levee improvements, there would be no permanent changes to the lands on the Sherman Island side of the planned gate structure. No recreational activity is known to occur in that area. Road access via East Sherman Island Levee Road to Outrigger Marina would be restored via the existing levee road following completion of levee work. For these reasons, the potential effect of Alternative 9 on recreation opportunities at Brannan Island State Recreation Area or the Sherman Island side of Threemile Slough would be minimal.

A new connection for boaters would be created with the construction of a channel and boat passage facility between the navigable portion of the Meadow Slough and the Sacramento River. This connection would provide for new boating opportunities within Delta Meadows; however, the introduction of a potential increase in motor boating activities within Delta Meadows may degrade the recreation opportunities and experience for mooring.

Operation of the operable gates would result in permanent changes to recreation opportunities including recreational boating activities such as waterskiing and wakeboarding. Mitigation Measures REC-13a and REC-13b would be available to reduce these effects.

As discussed under Impact REC-3, BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. For the reopening of Brannan Island State Recreation Area, completion of Delta Meadows-Locke Boarding House and potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. These commitments are further described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

BDCP would also contribute funds to further the DBW's aquatic weed control programs in the Delta. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP. This commitment is described in Appendix 3B, *Environmental Commitments, AMMs, and CMs.*

Due to the permanent speed zone restrictions in the vicinity of operable gate, and speed limits at boat passage facilities that could adversely affect high-speed recreation opportunities, such as waterskiing, wakeboarding, and tubing, at a number of existing recreational areas, these would be considered adverse effects.

***CEQA Conclusion*:** Operation of the operable gates would result in permanent changes to recreation opportunities including recreational boating activities such as waterskiing and wakeboarding. These effects are significant. Mitigation Measures REC-13a and REC-13b as well as other commitments made by the BDCP proponents would reduce these effects, but not to a less-than-significant level. Therefore, these effects are considered significant and unavoidable.

15.3.4 Effects and Mitigation Approaches—Alternatives 4A, 2D, and 5A

15.3.4.1 No Action Alternative Early Long-Term

The effects of the No Action Alternative (ELT) considered for the purposes of Alternatives 4A, 2D, and 5A would be expected to be similar to the effects described for the No Action Alternative (LLT) in Section 15.3.3.1. Recreation opportunities occurring under the No Action Alternative (ELT) would continue largely as described for Existing Conditions and would include continued implementation of SWP and CVP operations, maintenance, enforcement, and protection programs by federal, state, and local agencies and non-profit groups, as well as projects that are permitted or assumed to be constructed by in the early long-term period. This includes restoration actions occurring within the Yolo Bypass being driven by the 2008 and 2009 USFWS and NMFS Biological Opinions and the restoration of 8,000 acres of intertidal habitat in the Delta and Suisun Marsh.

Land and water-based recreation opportunities and activities occurring within the Delta and at upstream reservoirs under the No Action Alternative (ELT) would be similar to those described under the No Action Alternative during the late long-term timeframe. Because the No Action Alternative (ELT) implementation period would be shorter, the magnitude of land-disturbing activities occurring within the Delta that could disrupt access to land-based recreation sites and disrupt access to Delta channels used for recreation would be expected to be less than the No Action Alternative (LLT). Similarly, changes in water-based recreation opportunities associated with changes in upstream reservoir storage, streamflow, and the abundance of sport fish would also be similar to the No Action Alternative (LLT), but the magnitude of these changes would also be less because of the shorter time period of the No Action Alternative (ELT).

Similar to the No Action Alternative (LLT), CALSIM II output was used to help evaluate the potential changes in north-of-Delta and south-of-Delta reservoirs where recreation opportunities could be affected by the alternatives, including the No Action Alternative (ELT). As shown in Tables 15-19 and 15-20, the No Action Alternative (ELT) conditions would have more years in which reservoir levels fall below the recreation threshold relative to the existing condition with the exception of New Melones Reservoir. Under the No Action Alternative (ELT) conditions, the reservoirs would fall below the thresholds from 5 to 11 additional years than under Existing Conditions whereas New Melones Reservoir would be above the threshold for one additional year. The changes in the SWP and CVP reservoir elevations are attributable to change in demand and other external factors such as climate change. It is not possible to specifically define the exact extent of the changes attributable to future no action operations using these model simulation results. Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and No Action Alternative (ELT) cannot be isolated in this comparison.

Table 15-19. Summary of SWP and CVP Reservoir Recreation Opportunities (years below end-of-September recreation threshold) for Existing Conditions and No Action Alternative (ELT)

	Recreation Threshold[a]					
	Trinity Lake <2,270 ft Elevation		Shasta Lake <967 ft Elevation		Lake Oroville <700 ft Elevation	
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Years[b]	Change Relative to Existing Condition (CEQA)[c]
Existing Conditions (CEQA)	21		17		17	
No Action (ELT)	32	11	22	5	26	9

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected scenario. An elevation less than the recreation threshold indicates years during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., Existing Conditions). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Table 15-20. Summary of SWP and CVP Reservoir Recreation Opportunities (years below end-of-September recreation threshold) for Existing Conditions and the No Action Alternative (ELT)

	Recreation Threshold[a]					
	Folsom Lake <405 ft Elevation		New Melones Lake <900 ft Elevation		San Luis Reservoir <360 ft Elevation	
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Years[b]	Change Relative to Existing Condition (CEQA)[c]
Existing Conditions (CEQA)	22		9		3	
No Action (ELT)	33	11	8	-1	9	6

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected scenario. An elevation less than the recreation threshold indicates years during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., Existing Conditions). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

As described for the No Action Alternative (LLT) in Chapter 3, *Description of Alternatives*, many of the ongoing programs under No Action Alternative (ELT) would also include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA, the federal Endangered Species Act (ESA), and other federal laws and regulations. Future state and local actions would be required to comply with CEQA, the California Endangered Species Act (CESA), and other state and local laws and regulations. Compliance and permit requirements would be implemented on a case-by-case basis.

The potential for catastrophic seismic events and potential effects on recreation opportunities in the Delta under the No Action Alternative (ELT) would be the same as described under the No Action Alternative (LLT). The change in water quality resulting from a seismic event in which Delta levees fail could result in permanent displacement of existing, well-established public use or private commercial recreation facilities as well as result in long-term reduction of recreation opportunities, recreational navigation opportunities and recreational fishing opportunities. To reclaim land or rebuild levees after a catastrophic event due to climate change or a seismic event would potentially also result in adverse impacts to recreational resources.

CEQA Conclusion: Overall, the ongoing projects, programs, and plans under the No Action Alternative (ELT) would result in the potential for temporary and permanent effects that are not expected to substantially change recreation opportunities or experiences in the Delta region. Adverse effects on recreation would occur as a result of short-term disruptions that would result in less-than-significant impacts. Beneficial impacts on recreation could occur as programs are implemented. Overall, the impact of the No Action Alternative (ELT) on recreation resource is considered less than significant.

15.3.4.2 Alternative 4A—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

NEPA Effects: The extent of the permanent displacement of public use or private commercial recreation areas located within the Delta occurring under Alternative 4A would be the same as described for Alternative 4, as described in Section 15.3.3.9. The recreation areas that could be adversely affected are the Cosumnes River Preserve and Clifton Court Forebay. Recreation could be disrupted at the Cosumnes River Preserve by placing an RTM area to the north of the preserve, constructing an east-west permanent transmission line adjacent to the northern boundary of the preserve, and locating permanent tunnel shafts on the preserve. Modifications made to Clifton Court Forebay would disrupt recreation activities occurring on and near the forebay's south embankment. Other potential impacts along the alignment of the water conveyance facility include disruption of use of portions of Staten Island and use of DWR ponds currently used for water ski instruction and hound racing. As described in detail under Alternative 4, construction of the water conveyance facilities under Alternative 4A would not result in an adverse effect on public use or private commercial recreation facilities because none of these facilities would be permanently displaced.

CEQA Conclusion: The extent of permanent displacement of public use or private commercial recreation areas under Alternative 4A would be the same as discussed for Alternative 4 because the type and alignment of the water conveyance facilities are identical for the two alternatives. This includes placing permanent facilities on or disrupting access to the Cosumnes River Preserve, including public access to portions of Staten Island. Similarly, recreation use of the Clifton Court Forebay embankments would be disrupted during construction. Specifically, public access to the forebay's south embankment, which supports fishing and hunting, would be disrupted during construction. Alternative 4A would not result in the permanent displacement of well-established

public use or private commercial recreation facilities available for public access. This impact on these facilities would be less than significant and no mitigation for permanent loss is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction of recreation experiences within the Delta as a result of construction the water conveyance facilities under Alternative 4A would be the same as described for Alternative 4. Two recreation sites, Clifton Court Forebay and Cosumnes River Preserve, are within the construction footprint and six recreation sites or areas (Stone Lakes NWR, Clarksburg Boat Launch, Wimpy's Marina, Delta Meadows, Bullfrog Landing Marina, and Lazy M Marina) are within the 1,200- to 1,400-foot indirect impact area. Potential indirect effects on recreation include loss of access, construction noise, and changes in the visual character of the area surrounding the recreation sites.

As discussed in detail under Alternative 4, impacts on recreation occurring within the Stone Lakes NWR would be attributable to noise and changes in visual character as a result of temporary work areas, RTM storage, geotechnical exploration, construction of Intakes 2 and 3, and construction of the temporary transmission lines. Recreation activities that could be adversely affected include wildlife viewing and environmental education.

The Clarksburg Boat Launch is on the west bank of the Sacramento River across the river from the site of Intake 3. Although access to the boat launch would be maintained during the construction period, noise generated during construction and geotechnical testing could adversely affect use of the public access areas near the boat launch for fishing or other activities.

As discussed under Alternative 4, impacts on recreation opportunities occurring within the Cosumnes River Preserve would include disruption of wildlife viewing and docent-guided tours. Although no recreation opportunities would be permanently displaced, recreation opportunities occurring within portions of the preserve could be adversely affected during construction as result of the introduction of noise, light, and temporary facilities such as access roads, safe haven work sites, and tunnel shaft with temporary work areas.

Wimpy's Marina is a private boating facility located on the south fork of the Mokelumne River southeast of Walnut Grove. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years and would introduce noise that would adversely affect recreation occurring at the marina.

As discussed in detail under Alternative 4, recreation at Delta Meadows could be affected by geotechnical testing and construction and operation of the intermediate forebay and spillway. These activities would generate noise and introduce visual disturbances to the recreation site.

Recreation at the Bullfrog Landing Marina on Middle River could be affected by noise and visual disturbance as a result of constructing the water conveyance across Bacon Island. This would include impacts from constructing a temporary access road on the island as well as a temporary safe haven work area. Anglers on the river between the marina and the construction area would also experience noise and visual disturbances during construction.

On-water recreation opportunities not associated with formal recreation sites could be affected by the introduction of noise and light during the construction period. The quality of recreation opportunities in the vicinity of construction sites may be adversely affected by noise and changes in visual character.

As discussed in detail under Alternative 4, recreation opportunities, including fishing and hunting, could be adversely affected by expanding Clifton Court Forebay. Access to the forebay would be maintained. The opportunities for visitors who use the southern part of the forebay would be affected the most because of its proximity to the proposed construction areas. While the forebay is expanded and the new embankment is built, recreational visitors would lose access to the existing bank recreational activities. Construction would also cause noise and visual disturbances which would could deter fish and wildlife and result in reduced opportunities for fishing or hunting, as well as adversely affect the ambient recreation setting and recreation experience

Construction of Alternative 4A intakes and water conveyance facilities would result in disruption to recreational opportunities. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects. Overall, construction and geotechnical exploration may occur year-round and last from 2.5 to 13.5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences. Mitigation measures (REC-2, BIO-75, AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4a, AES-4b, AES-4c, AES-4d, TRANS-1a, TRANS-1b, TRANS-1c, NOI-1a, and NOI-1b) are available to address adverse effects on recreation resulting from introduction of noise and light and the loss of access. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

CEQA Conclusion: Construction of the Alternative 4A intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round. The mitigation measures described below, in combination with environmental commitments, would reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures. However, the level of impact would not be reduced to a less-than-significant level because it is not certain the mitigation would reduce the level of these impacts to less than significant in all the instances occurring within the entire study area. Therefore, these impacts are considered significant and unavoidable.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please see Mitigation Measure BIO-75 under Impact BIO-75 in the discussion of Alternative 4 in Chapter 12, *Terrestrial Biological Resources*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources* of the Draft EIR/EIS.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see to Mitigation Measure AES-1c under Impact AES-1in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please see Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please see Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please see Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please see Mitigation Measure TRANS-1b under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please see Mitigation Measure TRANS-1c under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction in recreational navigation opportunities as a result of constructing the proposed water conveyance facilities under Alternative 4A would be

identical to Alternative 4. Construction activities associated with constructing the three intakes on the Sacramento River, siphons near Clifton Court Forebay, Head of Old River barrier and operating barges and constructing temporary barge unloading facilities at Snodgrass Slough, Potato Slough, San Joaquin River, Middle River, Connection Slough, Old River, and the West Canal would disrupt boat passage and navigation at and near these sites. Although implementing Mitigation Measure TRANS-1a and helping to fund measures to reduce aquatic weeds would reduce impacts on recreational navigation, these effects would remain adverse because of the long duration of construction which would continually reduce recreation opportunities and distract from experiences occurring near construction activity.

CEQA Conclusion: Impacts on recreational navigation during construction of the water conveyance facilities under Alternative 4A would be identical to those described under Alternative 4. Impeding boat passage and navigation and resulting impacts on recreation would occur during construction of the intakes, temporary barge unloading facilities, and siphons. Although Mitigation Measure TRANS-1a would reduce impacts on navigation associated with barge unloading facilities and participating in the aquatic weed reduction program would help address impacts on navigation, the impact of constructing the water conveyance facilities would be considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of changes in sport fishing opportunities occurring within the study area under Alternative 4A would be the same as Alternative 4. Constructing water intakes, siphons, and operable barrier and placement and use of barge unloading facilities during tunnel/pipeline construction would result in temporary water quality effects (e.g., turbidity, accidental spills, disturbance of contaminated sediments); elevated underwater noise (associated with pile driving and other construction activities); fish exposure to stranding and direct physical injury; and temporary exclusion or degradation of spawning and rearing habitats. Expanding Clifton Court Forebay would restrict access to bank fishing sites during the construction period. Although fish populations likely would not be affected to the degree that the abundance of sport fish would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Due to the large size of the Plan Area and the 13-year duration that construction is expected to last for Alternative 4A, this impact would be significant. However, mitigation measures are available to reduce impacts by enhancing and ensuring access to nearby fishing sites and to address noise and visual disturbances. Mitigation Measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would help reduce or avoid impacts on recreational fishing near construction sites. With implementation of these mitigation measures, this impact would not be adverse.

CEQA Conclusion: The impact on recreational fishing opportunities as a result of constructing the water conveyance facilities under Alternative 4A would be the same as Alternative 4. The combined impact on recreational fishing opportunities would be considered significant. Implementing

mitigation measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would reduce the impact on recreational fishing to a less-than-significant level by providing alternate fishing sites, reducing noise generated during construction activities, and limiting changes in the visual character of recreational fishing sites.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under, Alternative 1A in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources,*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of operating the water conveyance facilities on recreational fishing opportunities under Alternative 4A would be the same as described under Alternative 4, because the same conveyance facilities would be built under Alternative 4A as under Alternative 4 and the operational scenarios analyzed under Alternative 4 include the operational scenario for Alternative 4A. Operation of Alternative 4A may result in changes in entrainment, spawning, rearing, and migration. However, effects on fish species that are popular for recreational fishing are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts on specific non-listed species, as discussed in Chapter 11, *Fish and Aquatic Resources*, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 4A would be considered less than significant because any impacts on fish and, as a result, impacts on recreational fishing, are anticipated to be isolated to certain areas and would not affect the abundance of popular sport fish.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

NEPA Effects: The methodology for assessing effects on recreation at major upstream storage reservoirs for Alternative 4A is the same as applied to Alternative 4 with the exception that Alternative 4A includes only Operational Scenario H3+ (slightly different than H3).

Modeling for Alternative 4A was conducted for Operational Scenario H3+, a point that generally falls between Scenario H3 and H4 operations, as the initial conveyance facilities operational scenario. As specified in Chapter 3, *Description of Alternatives*, Section 3.6.4 the Delta outflow criteria under Scenario H for Alternative 4A would be determined by the Endangered Species Act and California Endangered Species Act Section 2081 permits, and operations to obtain such outflow would likely be between Scenarios H3 and H4. Modeling results for Scenarios H3 and H4 using the 2010 CALSIM II model are shown in Appendix 5E, *Supplemental Modeling Requested by the State Water Resources Control Board Related to Increased Delta Outflows*, Attachment 1. In addition, following the initial operations, the adaptive management and monitoring program could be used to make long-term

changes in initial operations criteria to address uncertainties about spring outflow for longfin smelt and fall outflow for delta smelt, among other species.

Future conveyance facilities operational changes may also be made as a result of adaptive management to respond to advances in science and understanding of how operations affect species. Conveyance facilities would be operated under an adaptive management range represented by Boundary 1 and Boundary 2 (see Section 5E.2 of Appendix 5E for additional information on Boundary 1 and Boundary 2). Impacts as a result of operations within this range would be consistent with the impacts discussed for the alternatives considered in this EIR/EIS. As shown in Appendix 5F, water supply modeling results for H3+ are within the range of results for Scenarios H3 and H4, and is consistent with the impacts discussed in the Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement. The following analysis of Alternative 4A impacts reflects modeling results of Operational Scenario H3+. The results of this assessment are shown in Tables 15-21 and 15-22.

Existing Conditions (CEQA Baseline) Compared to Alternative 4A ELT (2025)

Under Alternative 4A (Operational Scenario H3+) recreation thresholds would be exceeded more frequently at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs relative to Existing Conditions. These changes represent a greater than 10% increase in the frequency the recreation thresholds are exceeded at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs, compared to Existing Conditions. However, as discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of the external factors to the total differences between Existing Conditions and Alternative 4A cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (ELT) to Alternative 4A for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 4A.

Existing Conditions (CEQA Baseline) Compared to Alternative 4A LLT (2060)

Under Alternative 4A recreation thresholds would be exceeded more frequently at Trinity, Shasta, Oroville, Folsom, New Melones, and San Luis Reservoirs relative to Existing Conditions. These changes represent a greater than 10% increase in the frequency the recreation thresholds are exceeded at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs. However, as discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of the external factors to the total differences between Existing Conditions and Alternative 4A cannot be isolated in this comparison.

No Action Alternative (ELT) Compared to Alternative 4A

The comparison of Alternative 4A conditions to the No Action Alternative (ELT) condition most closely represents changes in reservoir elevations that may occur as a result of operation of Alternative 4A because external factors such as change in demand and sea level rise and climate

change were the same (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Tables 15-21 and 15-22, Alternative 4A would result in small changes in the frequency with which the end-of-September reservoir levels at Trinity, Shasta, Oroville, Folsom, New Melones, and San Luis Reservoirs would fall below levels identified as important water-dependent recreation thresholds. The CALSIM II modeling results indicate that reservoir levels under Alternative 4A operations would either not change or would fall below the individual reservoir recreation thresholds less frequently than under No Action Alternative (ELT) conditions at Trinity, Shasta, Oroville, and New Melones Reservoirs. Operation of Alternative 4A would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions may represent improved recreation conditions under operation of Alternative 4A because there would be slightly fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (ELT) conditions.

The modeling result for Folsom Reservoir indicates there could be 3 additional years (out of 82) under Alternative 4A during which the reservoir level would fall below the reservoir's boating threshold at the end of September. The incremental change would not exceed the 10% increase in the frequency threshold that would indicate an adverse impact on recreation occurring at the reservoir.

The modeling results for San Luis Reservoir indicate there could be 23 additional years (out of 82) under Alternative 4A, during which the reservoir level would fall below the reservoir boating threshold at the end of September relative to the No Action Alternative (ELT) condition. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at San Luis Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, and hiking—would be available. The reduction in surface elevations at San Luis Reservoir would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

CEQA Conclusion: This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 4A operations would either slightly decrease (Folsom Reservoir) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (ELT). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity, Shasta, Oroville, Folsom, and New Melones Reservoirs. At Trinity, Shasta, Oroville, and Folsom Reservoirs, because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (ELT) conditions, these effects would be considered beneficial to recreation opportunities and experiences. At Trinity, Shasta, Oroville, Folsom, New Melones, and San Luis Reservoirs, there would be more years in which the reservoir or lake levels fall below the recreation threshold at Late Long Term relative to Existing Conditions. However, as discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Operation of Alternative 4A would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the reduction in reservoir access by boaters would be significant because it is a greater than 10% change and could

result in a significant impact on recreation. Mitigation Measure REC-6 would reduce this impact to a less-than-significant level.

Mitigation Measure REC-6: Provide an Alternative Boat Launch to Ensure Access to San Luis Reservoir

Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable.

Table 15-21. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of-September Elevations below Recreation Thresholds) for Alternative 4A

	Recreation Threshold[a]								
	Trinity Lake <2,270 ft Elevation			Shasta Lake <967 ft Elevation			Lake Oroville <700 ft Elevation		
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)
Existing Condition (CEQA)	21			17			17		
No Action Alternative (ELT)	32	11		22	5		26	9	
Alternative 4A (ELT)									
Operational Scenario H3+	29	8	-3	22	5	0	21	4	-5
Alternative 4A (LLT)									
Operational Scenario H3+	41	20	-2	28	11	-1	29	12	-3

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action Alternative ELT). A positive change would indicate more years with reduced recreation opportunities.

Table 15-22. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of-September Elevations below Recreation Thresholds) for Alternative 4A

	Recreation Threshold[a]								
	Folsom Lake <405 ft Elevation			New Melones Lake <900 ft Elevation			San Luis Reservoir <360 ft Elevation		
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action ELT (NEPA)
Existing Condition (CEQA)	22			9			3		
No Action (ELT)	33	11		8	-1		9	6	
Alternative 4A (ELT)									
Operational Scenario H3+	36	14	3	8	-1	0	32	29	23
Alternative 4A (LLT)									
Operational Scenario H3+	44	22	-6	13	4	0	37	34	28

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action ELT). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on water-based recreation under Alternative 4A would be the same as described under Alternative 4. These potential effects would occur as a result of regular maintenance activities of the intakes. The effect on boating is not considered adverse because the boat passage around the intakes would be maintained and disruption of boat access in the immediate vicinity of the intakes would be short-term.

CEQA Conclusion: Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on land-based recreation under Alternative 4A would be the same as described under Alternative 4. Maintenance activities

would be short-term and intermittent, occur within the immediate vicinity of water conveyance facilities, and are not expected to generate noise that would distract from adjacent recreation opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact and no mitigation would be required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 4A would result in effects on fishing opportunities similar to those described for Alternative 4. The magnitude of the effects occurring under Alternative 4A would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions (Environmental Commitments 3, 4, 6–12, 15, and16) occurring in the Plan Area would be much less than the conservation measures proposed under Alternative 4. Construction, operation, and maintenance of the conservation and stressor reduction components could have affects that would be similar in nature to those discussed above for construction, operation, and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation and stressor reduction components would be much less when compared to Alternative 4. In addition, the conservation and stressor reduction components would be expected to result in long-term benefits to aquatic species.

During the implementation stage, construction activity associated with the conservation and stressor reduction components could result in adverse effects on recreation by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would not be considered adverse because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance. Therefore, overall, there would not be an adverse impact to fishing opportunities in the long-term.

CEQA Conclusion: Conservation and stressor reduction components would be expected to improve fishing opportunities within the Plan Area. The adverse and beneficial impacts would be similar to those described under Alternative 4, however the extent of those impacts would be much less because the restoration actions occurring under Alternative 4A would include much less acreage and a smaller geographic scope than the conservation measures described under Alternative 4. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would be considered less than significant because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 4A would result in effects on boating-related recreation similar to the effects discussed under Alternative 4 for implementing conservation measures. However, the extent of the effects on boating under Alternative 4A would be much less because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less when compared to Alternative 4. Restoration of channel margin enhancement, riparian natural community, and nontidal marsh could provide increased boating opportunities within the study area.

CEQA Conclusion: Channel modification and other activities associated with implementation of some of the conservation and stressor reduction components may limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Under Environmental Commitment 6, where construction and completion of new benches would extend into existing waterways, navigable areas would be slightly reduced, which would permanently affect boating-related recreation. Under Environmental Commitment 16, depending on the design, the construction and operation of these barriers could constrict boat passage or necessitate lower speed limits, diminishing the boating experience around the barriers. Temporary effects would stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, overall the conservation and stressor reduction components would also lead to an enhanced boating experience by expanding the extent of waterways available to boaters. Overall, these measures would not be anticipated to result in a long-term reduction in boating-related recreation activities; therefore, this impact is considered less than significant.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 4A would result in effects on upland recreational opportunities similar to Alternative 4. However, the extent of these effects occurring under Alternative 4A would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less. The actions could benefit the same types of recreation opportunities (e.g., hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing) as described for Alternative 4, however the recreational benefits accruing from these actions would be much less because of the smaller acreage that would be restored. Conversely, the conservation and stressor reduction actions could adversely affect established recreation activities that would no longer be possible or compatible with restoration. These potential adverse effects would be would be similar to those described under Alternative 4, however the effects are expected to be much less because of the smaller total acreage that would be restored.

Implementing the conservation and stressor reduction components could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities available for hiking, nature photography, or other similar activity. However, implementation of the measures would also restore or enhance new potential sites for upland recreation thereby potentially

improving the quality of recreational opportunities. Therefore, overall, there would not be an adverse impact.

CEQA Conclusion: Similar to Alternative 4, site preparation and earthwork activities occurring under Alternative 4A required to implement the conservation and stressor reduction components could temporarily limit or disrupt opportunities for upland recreation. Site preparation and earthwork associated with restoration could result in temporary closure of recreational areas and excess noise, and limit access to existing upland recreational areas. These impacts on upland recreational opportunities would be considered less than significant because—similar to Alternative 4—environmental commitments incorporated into the project would require the project proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities as an element of the conservation and stressor reduction components. These components would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

NEPA Effects: Similar to Alternative 4A, constructing the water conveyance facilities and implementing the conservation and stressor reduction components under Alternative 4A could result in incompatibilities with plans and policies that address recreation. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues are overviewed Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 4A is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 4A on recreation resources are addressed in Impacts REC-1 through REC-11, and in other chapters, such as Chapter 23, *Noise*, and Chapter 17, *Aesthetics and Visual Resources*. A summary of the compatibility evaluations related to recreation resources for plans and policies is contained in the analysis of Alternative 4 and is applicable to Alternative 4A. Generally the evaluation found that implementing Alternative 4A would not be compatible with some provisions of The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 and some policies of the Sacramento, San Joaquin, Contra Costa, and Alameda Counties general plans that address recreation.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in Alternative 4A, impacts REC-1 through REC-11, and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.4.3 Alternative 2D—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 1, 2, 3, 4, and 5 (15,000 cfs; Operational Scenario B)

For the purposes of assessment of effects on recreation, Alternative 2D is the same as Alternative 4A, with the following exceptions.

- Under Alternative 2D, a total of five intake facilities would be constructed and operated. Intake locations are 1 through 5.
- The operations scenario for Alternative 2D differs from Alternative 4A (scenario B).

Tables 15-15 under Alternative 4 lists the recreation sites and areas that may be affected by Alternative 2D. Specific effects on recreation areas or sites are discussed below.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

NEPA Effects: Alternative 2D would include the same physical/structural components as Alternative 4, except that it would include two additional intakes compared to Alternative 4. The extent of the permanent displacement of public use or private commercial recreation areas located within the Delta occurring under Alternative 2D as a result of the location of the intakes would be the same as described for Alternative 4. The proposed location of the Alternative 2D five intake facilities, tunnels, and associated water conveyance facilities would not lie within the designated boundaries of an existing public use recreation site. The post-construction location of the water conveyance facilities would not result in long-term disruption or reduction of any well-established recreation activity or site, including parks, marinas, or other designated areas. Therefore, there would be no adverse effects. The extent of the permanent displacement of public use or private commercial recreation areas under Alternative 2D as a result of the conveyance facilities located along the rest of the alignment past the intakes, would be the same as described for Alternative 4, as described in Section 15.3.3.9.

CEQA Conclusion: The extent of permanent displacement of public use or private commercial recreation areas as a result of the location of the intakes under Alternative 2D would be the same as discussed for Alternative 4 because the location of proposed intakes are similar for the two alternatives. The alternative would not locate alternative facilities that would result in the permanent displacement of any well-established public use or private commercial recreation facility available for public access. The extent of permanent displacement of public use or private commercial recreation areas as a result of the location of the rest of the alignment past the intakes under Alternative 2D would be the same as discussed for Alternative 4 because the location of proposed alignments are similar for the two alternatives. Therefore, impacts are considered less than significant. No mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction of recreation experiences within the Delta as a result of construction the water conveyance facilities under Alternative 2D would be the same as described for Alternative 4. Although Alternative 2D includes two more intakes than Alternative 4,

both alternatives would affect the same recreational facilities. Clarksburg Boat Launch and Stone Lakes NWR would be affected by long-term noise and visual disturbances from the construction of the intakes, as described under Alternative 4. Two recreation sites, Clifton Court Forebay and Cosumnes River Preserve, are within the potential construction footprint and six recreation sites or areas (Stone Lakes NWR, Clarksburg Boat Launch, Wimpy's Marina, Delta Meadows, Bullfrog Landing Marina, and Lazy M Marina) are within the 1,200- to 1,400-foot indirect impact area, as described in Alternative 4. Potential indirect effects on recreation include loss of access, construction noise, and changes in the visual character of the area surrounding the recreation sites.

Stone Lakes NWR would be affected by noise and visual disturbances as a result of construction of and associated work areas related to Intakes 1 through 4. These impacts would be the same as those described for Intakes 2 and 3 under Alternative 4.

As discussed in detail under Alternative 4, impacts on recreation occurring within the Stone Lakes NWR would be attributable to noise and changes in visual character as a result of temporary work areas, RTM storage, geotechnical exploration, construction of Intakes 2 and 3, and construction of the temporary transmission lines. Recreation activities that could be adversely affected include wildlife and environmental education.

The Clarksburg Boat Launch is on the west bank of the Sacramento River across the river from the site of Intake 3. Although access to the boat launch would be maintained during the construction period, noise generated during construction and geotechnical testing could adversely affect use of the public access areas near the boat launch for fishing or other activities.

As discussed under Alternative 4, impacts on recreation opportunities occurring within the Cosumnes River Preserve would include disruption of wildlife viewing and docent-guided tours. Although no recreation opportunities would be permanently displaced, recreation opportunities occurring within portions of the preserve could be adversely affected during construction as result of the introduction of noise, light, and temporary facilities such as access roads, safe haven work sites, and tunnel shaft with temporary work areas.

Wimpy's Marina is a private boating facility located on the south fork of the Mokelumne River southeast of Walnut Grove. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years and would introduce noise that would adversely affect recreation occurring at the marina.

As discussed in detail under Alternative 4, recreation occurring at Delta Meadows could be affected by geotechnical testing and construction and operation of the intermediate forebay and spillway. These features would generate noise and introduce visual disturbances to the recreation site.

Recreation occurring at the Bullfrog Landing Marina on Middle River could be affected by noise and visual disturbance as a result of constructing the water conveyance across Bacon Island. This would include impacts from constructing a temporary access road on the island as well as a temporary safe haven work area. Anglers on the river between the marina and the construction area would also experience noise and visual disturbances during construction.

On-water recreation opportunities not associated with formal recreation sites could be affected by the introduction of noise and light during the construction period. The quality of recreation opportunities in the vicinity of construction sites may be adversely affected by noise and changes in visual character.

As discussed in detail under Alternative 4, recreation opportunities, including fishing and hunting, could be adversely affected by expanding Clifton Court Forebay. Recreation would be adversely affected because access to the forebay would not be allowed during construction.

Construction of Alternative 2D intakes and water conveyance facilities would result in disruption to recreational opportunities. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects. Overall, construction and geotechnical exploration may occur year-round and last from 2.5 to 13.5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences. Mitigation measures (REC-2, BIO-75, AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-2D, AES-4b, AES-4c, AES-4d, TRANS-1a, TRANS-1b, TRANS-1c, NOI-1a, and NOI-1b) are available to address adverse effects on recreation resulting from introduction of noise and light and the loss of access. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

CEQA Conclusion: Construction of the Alternative 2D intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round. The mitigation measures described below, in combination with environmental commitments, would reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures. However, the level of impact would not be reduced to a less-than-significant level because it is not certain the mitigation would reduce the level of these impacts to less than significant in all the instances occurring within the entire study area. Therefore, these impacts are considered significant and unavoidable.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please see Mitigation Measure BIO-75 under Impact BIO-75 in the discussion of Alternative 4 in Chapter 12, *Terrestrial Biological Resources*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see to Mitigation Measure AES-1c under Impact AES-1in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.25 Mile of Residents

Please see Mitigation Measure AES-2D under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please see Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please see Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please see Mitigation Measure TRANS-1b under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please see Mitigation Measure TRANS-1c under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction in recreational navigation opportunities as a result of constructing the proposed water conveyance facilities under Alternative 2D would be similar to Alternative 4. Construction activities associated with constructing five intakes on the Sacramento River, siphons near Clifton Court Forebay, Head of Old River barrier and operating barges and constructing temporary barge unloading facilities at Snodgrass Slough, Potato Slough, San Joaquin River, Middle River, Connection Slough, Old River, and the West Canal would disrupt boat passage and navigation at and near these sites. Although implementing Mitigation Measure TRANS-1a and helping to fund measures to reduce aquatic weeds would reduce impacts on recreational navigation, these effects would remain adverse because of the long duration of construction which would continually reduce recreation opportunities and distract from experiences occurring near construction activity.

CEQA Conclusion: Impacts on recreational navigation during construction of the water conveyance facilities under Alternative 2D would be similar to those described under Alternative 4. Impeding boat passage and navigation and resulting impacts on recreation would occur during construction of the intakes, temporary barge unloading facilities, and siphons. Although Mitigation Measure TRANS-1a would reduce impacts on navigation associated with barge unloading facilities and participating in the aquatic weed reduction program would help address impacts on navigation, the impact of constructing the water conveyance facilities would be considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of changes in sport fishing opportunities occurring within the study area under Alternative 2D would be similar to Alternative 4. Constructing water intakes, siphons, and operable barrier and placement and use of barge unloading facilities during tunnel/pipeline construction would result in temporary water quality effects (e.g., turbidity, accidental spills, disturbance of contaminated sediments); elevated underwater noise (associated with pile driving and other construction activities); fish exposure to stranding and direct physical injury; and temporary exclusion or degradation of spawning and rearing habitats. Expanding Clifton Court Forebay would restrict access to bank fishing sites during the construction period. Although fish populations likely would not be affected to the degree that the abundance of sport fish would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Due to the magnitude of the Plan Area and the 12-year duration construction for this alternative, this impact would be significant. However, mitigation measures are available to reduce impacts by enhancing and ensuring access to nearby fishing sites and to address noise and visual disturbances. Mitigation Measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would help reduce or avoid impacts on recreational fishing occurring at construction sites. With implementation of these mitigation measures, this impact would not be adverse.

CEQA Conclusion: The impact on recreational fishing opportunities as a result of constructing the water conveyance facilities under Alternative 2D would be similar to Alternative 4. The combined impact on recreational fishing opportunities would be considered significant. Implementing mitigation measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would reduce the impact on recreational fishing to a less-than-significant level by providing alternate fishing sites, reducing noise generated during construction activities, and limiting changes in the visual character of recreational fishing sites.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under, Alternative 1A in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of operating the water conveyance facilities on recreational fishing opportunities under Alternative 2D would be similar to Alternative 4. Operation of Alternative 2D may result in changes in entrainment, spawning, rearing, and migration. However, effects on fish species that are popular for recreational fishing are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts on specific non-listed species, as discussed in Chapter 11, *Fish and Aquatic Resources*, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 2D would be considered less than significant because any impacts on fish and, as a result, impacts on recreational fishing, are anticipated to be isolated to certain areas and would not affect the abundance of popular sport fish.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

NEPA Effects: The methodology for assessing effects on recreation at major upstream storage reservoirs for Alternative 2D is the same as applied to Alternative 2A. However, Alternative 2A only analyzes Operational Scenario B Late Long Term compared to No Action Alternative Late Long Term (2060). Alternative 2D analyzes Operational Scenario B Early Long Term compared to No Action Alternative Early Long Term (2025). The results of this assessment are shown in Tables 15-23 and 15-24.

Existing Conditions (CEQA Baseline) Compared to Alternative 2D ELT (2025)

Under Alternative 2D Operational Scenario B recreation thresholds would be exceeded more frequently at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs relative to Existing Conditions. These changes represent a greater than 10% increase in the frequency the recreation thresholds are exceeded under Operational Scenario B Early Long Term at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs compared to Existing Conditions. However, as discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of the external factors to the total differences between Existing Conditions and Alternative 2D Operational Scenario B Early Long Term cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (ELT) to Alternative 2D for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 2D.

Existing Conditions (CEQA Baseline) Compared to Alternative 2D LLT (2060)

Existing Conditions compared to Alternative 2D LLT (2060) results are the same as described under Alternative 2A.

No Action Alternative (ELT) Compared to Alternative 2D

The comparison of Alternative 2D to the No Action Alternative (ELT) condition most closely represents changes in reservoir elevations that may occur as a result of operation of Alternative 2D because both conditions external factors such as change in demand and sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Tables 15-23 and 15-24, Alternative 2D Operational Scenario B Early Long Term would result in changes in the frequency with which the end-of-September reservoir levels at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs would fall below levels identified as important water-dependent recreation thresholds. The CALSIM II modeling results indicate that reservoir levels under Alternative 2D ELT operations would either not change or would fall below the individual reservoir recreation thresholds less frequently than under No Action Alternative (ELT) conditions at Trinity, Shasta, and Oroville Reservoirs. Operation of Alternative 2D would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions for ELT results under operation of Alternative 2D because there would be slightly fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (ELT) conditions.

The ELT modeling result for Folsom Reservoir indicates there could be 4 additional years under Alternative 2D, during which the reservoir level would fall below the reservoir's boating threshold at the end of September. The change would not exceed the 10% increase in the frequency threshold that would indicate an adverse impact on recreation occurring at the reservoir.

The ELT modeling result for New Melones Reservoir indicates there could be 1 additional year under Alternative 2D, during which the reservoir level would fall below the reservoir's boating threshold at the end of September. The change would not exceed the 10% increase in the frequency threshold that would indicate an adverse impact on recreation occurring at the reservoir.

The ELT modeling results for San Luis Reservoir indicate there could be 26 additional years under Alternative 2D, during which the reservoir level would fall below the reservoir boating threshold at the end of September relative to the No Action Alternative (ELT) condition. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at San Luis Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. The reduction in surface elevations at San Luis Reservoir under Operational Scenarios H3 and H4 would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

CEQA Conclusion: This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 2D operations would either slightly decrease (Folsom and New Melones Reservoirs) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (ELT). These changes in reservoir and lake elevations would result in a less-than-

significant impact on recreation opportunities and experiences at Trinity, Shasta, Oroville, Folsom, and New Melones Reservoirs. At Trinity and Oroville Reservoirs, because there would be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (ELT) conditions, these effects would be considered beneficial to recreation opportunities and experiences. Operation of Alternative 2D would not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir at ELT, the reduction in reservoir access by boaters would be significant because it is a greater than 10% change and could result in a significant impact on recreation. Mitigation Measure REC-6 would reduce this impact to a less-than-significant level.

Mitigation Measure REC-6: Provide a Temporary Alternative Boat Launch to Ensure Access to San Luis Reservoir

Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable.

Table 15-23. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of-September Elevations below Recreation Thresholds) for Alternative 2D

	Recreation Threshold[a]								
	Trinity Lake <2,270 ft Elevation			Shasta Lake <967 ft Elevation			Lake Oroville <700 ft Elevation		
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative (ELT) (CEQA/ NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative (ELT) (CEQA/ NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative (ELT) (CEQA/ NEPA)
Existing Condition (CEQA)	21			17			17		
No Action Alternative (ELT)	32	11		22	5		26	9	
Alternative 2D (ELT)									
Operational Scenario B	31	10	-1	22	5	0	20	3	-6
Alternative 2D (LLT)									
Operational Scenario B	43	22		29	12		29	12	

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action Alternative ELT). A positive change would indicate more years with reduced recreation opportunities.

Table 15-24. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of-September Elevations below Recreation Thresholds) for Alternative 2D

	Recreation Threshold[a]								
	Folsom Lake <405 ft Elevation			New Melones Lake <900 ft Elevation			San Luis Reservoir <360 ft Elevation		
Scenario	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative ELT (CEQA/ NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative ELT (CEQA/ NEPA)	Years[b]	Change Relative to Existing Condition (CEQA)[c]	Change Relative to No Action Alternative ELT (CEQA/ NEPA)
Existing Condition (CEQA)	22			9			3		
No Action (ELT)	33	11		8	-1		9	6	
Alternative 2D (ELT)									
Operational Scenario B	37	15	4	9	0	1	35	32	26
Alternative 2D (LLT)									
Operational Scenario B	44	22		12	3		34	31	

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action ELT). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on water-based recreation under Alternative 2D would be the same as described under Alternative 4. These potential effects would occur as a result of regular maintenance activities of the intakes. The effect on boating is not considered adverse because the boat passage around the intakes would be maintained and disruption of boat access in the immediate vicinity of the intakes would be short-term.

CEQA Conclusion: Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on land-based recreation under Alternative 2D would be the same as described under Alternative 4. Maintenance activities would be short-term and intermittent, occur within the immediate vicinity of water conveyance facility, and are not expected to generate noise that would distract from adjacent recreation opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact and no mitigation would be required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 2D would result in effects on fishing opportunities similar to those described for Alternative 4. The magnitude of the effects occurring under Alternative 2D would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions (Environmental Commitments 3, 4, 6–12, 15, and 16) occurring in the Plan Area would be much less than the conservation measures proposed under Alternative 4. Construction, operation, and maintenance of the conservation and stressor reduction components could have affects that would be similar in nature to those discussed above for construction, operation, and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation and stressor reduction components would be much less when compared to Alternative 4. In addition, the conservation and stressor reduction components would be expected to result in long-term benefits to aquatic species.

During the implementation stage, construction activity associated with the conservation and stressor reduction components could result in adverse effects on recreation by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would not be considered adverse because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance.

CEQA Conclusion: Conservation and stressor reduction components would be expected to improve fishing opportunities within the Plan Area. The adverse and beneficial impacts would be similar to those described under Alternative 4, however the extent of those impacts would be much less because the restoration actions occurring under Alternative 2D would include much less acreage and a smaller geographic scope than the conservation measures described under Alternative 4. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would be considered less than significant because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 2D would result in effects on boating-related recreation similar to the effects discussed under Alternative 4 for implementing conservation measures. However, the extent of the effects on boating under Alternative 2D would be much less because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less when compared to Alternative 4. Restoration of channel margin enhancement, riparian natural community, and nontidal marsh could provide increased boating opportunities within the study area.

CEQA Conclusion: Channel modification and other activities associated with implementation of some of the conservation and stressor reduction components may limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. However, overall the conservation and stressor reduction components would also lead to an enhanced boating experience by expanding the extent of waterways available to boaters. Overall, these measures would not be anticipated to result in a long-term reduction in boating-related recreation activities; therefore, this impact is considered less than significant.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6–12, 15, and16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 2D would result in effects on upland recreational opportunities similar to Alternative 4. However, the extent of these effects occurring under Alternative 2D would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less. The actions could benefit the same types of recreation opportunities (e.g., hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing) as described for Alternative 4, however the recreational benefits accruing from these actions would be much less because of the smaller acreage that would be restored. Conversely, the conservation and stressor reduction actions could adversely affected established recreation activities that would no longer be possible or compatible with restoration. These potential adverse effects would be would be similar to those described under Alternative 4, however the effects are expected to be much less because of the smaller total acreage that would be restored.

Implementing the conservation and stressor reduction components could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities available to hiking, nature photography, or other similar activity. However, implementation of the measures would also restore or enhance new potential sites for upland recreation thereby potentially improving the quality of recreational opportunities.

CEQA Conclusion: Similar to Alternative 4, site preparation and earthwork activities occurring under Alternative 2D required to implement the conservation and stressor reduction components could temporarily limit or disrupt opportunities for upland recreational. These impacts on upland recreational opportunities would be considered less than significant because—similar to Alternative 4—environmental commitments incorporated into the project would require the project proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities as an element of the conservation and stressor reduction components. These components would not be

anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

NEPA Effects: Similar to Alternative 4, constructing the water conveyance facilities and implementing the conservation and stressor reduction components under Alternative 2D could result in incompatibilities with plans and policies that address recreation. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues are overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 2D is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 2D on recreation resources are addressed in Impacts REC-1 through REC-11, and in other chapters, such as Chapter 23, *Noise*, and Chapter 17, *Aesthetics and Visual Resources*. A summary of the compatibility evaluations related to recreation resources for plans and policies is contained in the analysis of Alternative 4 and is applicable to Alternative 2D. Generally the evaluation found that implementing Alternative 2D would not be compatible with some provisions of The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 and some policies of the Sacramento, San Joaquin, Contra Costa, and Alameda Counties general plans that address recreation.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in Alternative 2D, impacts REC-1 through REC-11, and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.4.4 Alternative 5A—Dual Conveyance with Modified Pipeline/Tunnel and Intake 2 (3,000 cfs; Operational Scenario C)

For the purposes of assessment of effects on recreation, Alternative 5D is the same as Alternative 4A, with the following exceptions.

- Only one intake facility would be constructed under Alternative 5D (Intake 2).
- Alternative 5 has a different operations scenario (Operational Scenario C).

Tables 15-15 under Alternative 4 lists the recreation sites and areas that may be affected by Alternative 5A. Specific effects on recreation areas or sites are discussed below.

Impact REC-1: Permanent Displacement of Existing Well-Established Public Use or Private Commercial Recreation Facility Available for Public Access as a Result of the Location of Proposed Water Conveyance Facilities

NEPA Effects: The extent of the permanent displacement of public use or private commercial recreation areas located within the Delta occurring under Alternative 5A would be the same as described for Alternative 4, as described in Section 15.3.3.9. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than

Intakes 2, 3, and 5 as under Alternative 4. The recreation areas that could be adversely affected are the Cosumnes River Preserve and Clifton Court Forebay. Recreation could be disrupted at the Cosumnes River Preserve by placing an RTM area to the north of the preserve, constructing an east-west permanent transmission line adjacent to the northern boundary of the preserve, and locating permanent tunnel shafts on the preserve. Modifications made to Clifton Court Forebay would disrupt recreation activities occurring on and near the forebay's south embankment. Other potential impacts along the alignment of the water conveyance facility include disruption of use of portions of Staten Island and use of DWR ponds currently used for water ski instruction and hound racing. As described in detail under Alternative 4, construction of the water conveyance facilities under Alternative 5A would not result in an adverse effect on public use or private commercial recreation facilities because none of these facilities would be permanently displaced.

CEQA Conclusion: The extent of permanent displacement of public use or private commercial recreation areas under Alternative 5A would be the same as discussed for Alternative 4 because the type and alignment of the water conveyance facilities are similar for the two alternatives. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. This includes placing permanent facilities on or disrupting access to the Cosumnes River Preserve, including public access to portions of Staten Island. Similarly, recreation use of the Clifton Court Forebay embankments would be disrupted during construction. Specifically, public access to the forebay's south embankment, which supports fishing and hunting, would be disrupted during construction. Alternative 5A would not result in the permanent displacement of well-established public use or private commercial recreation facilities available for public access. The impact on these facilities would be less than significant and no mitigation is required.

Impact REC-2: Result in Long-Term Reduction of Recreation Opportunities and Experiences as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction of recreation experiences within the Delta as a result of construction the water conveyance facilities under Alternative 5A would be the same as described for Alternative 4. While Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4, the same recreation sites would be affected. Two recreation sites, Clifton Court Forebay and Cosumnes River Preserve, are within the construction footprint and six recreation sites or areas (Stone Lakes NWR, Clarksburg Boat Launch, Wimpy's Marina, Delta Meadows, Bullfrog Landing Marina, and Lazy M Marina) are within the 1,200– to 1,400-foot indirect impact area. Potential indirect effects on recreation include loss of access, construction noise, and changes in the visual character of the area surrounding the recreation sites.

As discussed in detail under Alternative 4, impacts on recreation occurring within the Stone Lakes NWR would be attributable to noise and changes in visual character as a result of temporary work areas, RTM storage, geotechnical exploration, construction of Intake 2, and construction of the temporary transmission lines. Recreation activities that could be adversely affected include wildlife and environmental education.

As discussed under Alternative 4, impacts on recreation opportunities occurring within the Cosumnes River Preserve would include disruption of wildlife viewing and docent-guided tours. Although no recreation opportunities would be permanently displaced, recreation opportunities occurring within portions of the preserve could be adversely affected during construction as result

of the introduction of noise, light, and temporary facilities such as access roads, safe haven work sites, and tunnel shaft with temporary work areas.

Wimpy's Marina is a private boating facility located on the south fork of the Mokelumne River southeast of Walnut Grove. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years and would introduce noise that would adversely affect recreation occurring at the marina.

As discussed in detail under Alternative 4, recreation occurring at Delta Meadows could be affected by geotechnical testing and construction and operation of the intermediate forebay and spillway. These features would generate noise and introduce visual disturbances to the recreation site.

Recreation occurring at the Bullfrog Landing Marina on Middle River could be affected by noise and visual disturbance as a result of constructing the water conveyance across Bacon Island. This would include impacts from constructing a temporary access road on the island as well as a temporary safe haven work area. Anglers on the river between the marina and the construction area would also experience noise and visual disturbances during construction.

On-water recreation opportunities not associated with formal recreation sites could be affected by the introduction of noise and light during the construction period. The quality of recreation opportunities in the vicinity of construction sites may be adversely affected by noise and changes in visual character.

As discussed in detail under Alternative 4, recreation opportunities, including fishing and hunting, could be adversely affected by expanding Clifton Court Forebay. Recreation would be adversely affected because access to the forebay would not be allowed during construction.

Construction of Alternative 5A intakes and water conveyance facilities would result in disruption to recreational opportunities. Indirect effects on recreation experiences may occur as a result of impaired access, construction noise, or negative visual effects. Overall, construction and geotechnical exploration may occur year-round and last from 2.5 to 13.5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences. Mitigation measures (REC-2, BIO-75, AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-5A, AES-4b, AES-4c, AES-4d, TRANS-1a, TRANS-1b, TRANS-1c, NOI-1a, and NOI-1b) are available to address adverse effects on recreation resulting from introduction of noise and light and the loss of access. However, due to the length of time that construction would occur and the dispersed effects across the Delta, the direct and indirect effects related to temporary disruption of existing recreational activities at facilities within the impact area would be adverse.

CEQA Conclusion: Construction of the Alternative 5A intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round. The mitigation measures described below, in combination with environmental commitments, would reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures. However, the level of impact would not be reduced to a less-than-significant level because

it is not certain the mitigation would reduce the level of these impacts to less than significant in all the instances occurring within the entire study area. Therefore, these impacts are considered significant and unavoidable.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

Please see Mitigation Measure BIO-75 under Impact BIO-75 in the discussion of Alternative 4 in Chapter 12, *Terrestrial Biological Resources*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see to Mitigation Measure AES-1c under Impact AES-1in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.25 Mile of Residents

Please see Mitigation Measure AES-5A under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please see Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please see Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d in Chapter 17, *Aesthetics and Visual Resources*, Alternative 1A, Impact AES-4.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1b: Limit Hours or Amount of Construction Activity on Congested Roadway Segments

Please see Mitigation Measure TRANS-1b under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure TRANS-1c: Make Good Faith Efforts to Enter into Mitigation Agreements to Enhance Capacity of Congested Roadway Segments

Please see Mitigation Measure TRANS-1c under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of the long-term reduction in recreational navigation opportunities as a result of constructing the proposed water conveyance facilities under Alternative 5A would be similar to Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. Construction activities associated with constructing Intake 1 on the Sacramento River, siphons near Clifton Court Forebay, Head of Old River barrier and operating barges and constructing temporary barge unloading facilities at Snodgrass Slough, Potato Slough, San Joaquin River, Middle River, Connection Slough, Old River, and the West Canal would disrupt boat passage and navigation at and near these sites. Although implementing Mitigation Measure TRANS-1a and helping to fund measures to reduce aquatic weeds would reduce impacts on recreational navigation, these effects would remain adverse because of the long duration of construction which would continually reduce recreation opportunities and distract from experiences occurring near construction activity.

CEQA Conclusion: Impacts on recreational navigation during construction of the water conveyance facilities under Alternative 5A would be similar to those described under Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. Impeding boat passage and navigation and resulting impacts on recreation would occur during construction of the intakes, temporary barge unloading facilities, and siphons. Although Mitigation Measure TRANS-1a would reduce impacts on navigation associated with barge unloading facilities and participating in the aquatic weed reduction program would help address impacts on navigation, the impact of constructing the water conveyance facilities would be considered significant and unavoidable.

Mitigation Measure TRANS-1a: Implement Site-Specific Construction Traffic Management Plan

Please see Mitigation Measure TRANS-1a under Impact TRANS-1 in the discussion of Alternative 4 in Chapter 19, *Transportation*.

Impact REC-4: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities

NEPA Effects: The extent of changes in sport fishing opportunities occurring within the study area under Alternative 5A would be the same as Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. Constructing one water intake, siphons, and operable barrier and placement and use of barge unloading facilities during tunnel/pipeline construction would result in temporary water quality effects (e.g., turbidity, accidental spills, disturbance of contaminated sediments); elevated underwater noise (associated with pile driving and other construction activities); fish exposure to stranding and direct physical injury; and temporary exclusion or degradation of spawning and rearing habitats. Expanding Clifton Court Forebay would restrict

access to bank fishing sites during the construction period. Although fish populations likely would not be affected to the degree that the abundance of sport fish would be substantially reduced, construction conditions would introduce noise and visual disturbances that would affect the recreation experience for anglers.

Due to the magnitude of the Plan Area and the 12-year duration of construction for this alternative, this impact would be significant. However, mitigation measures are available to reduce impacts by enhancing and ensuring access to nearby fishing sites and to address noise and visual disturbances. Mitigation Measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would help reduce or avoid impacts on recreational fishing occurring at construction sites. With implementation of these mitigation measures, this impact would not be adverse.

CEQA Conclusion: The impact on recreational fishing opportunities as a result of constructing the water conveyance facilities under Alternative 5A would be the same as Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. The combined impact on recreational fishing opportunities would be considered significant. Implementing mitigation measures REC-2, NOI-1a, NOI-1b, AES-1a, AES-1b AES-1c AES-1d, AES-1e, AES-1f, and AES-1g would help reduce the impact on recreational fishing to a less-than-significant level by providing alternate fishing sites, reducing noise generated during construction activities, and limiting changes in the visual character of recreational fishing sites.

Mitigation Measure REC-2: Provide Alternative Bank Fishing Access Sites

Please see Mitigation Measure REC-2 under Impact REC-2 in the discussion of Alternative 4.

Mitigation Measure NOI-1a: Employ Noise-Reducing Construction Practices during Construction

Please see Mitigation Measure NOI-1a under Impact NOI-1 in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure NOI-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please see Mitigation Measure NOI-1b under, Alternative 1A in the discussion of Alternative 4 in Chapter 23, *Noise*.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under AES-1 in the discussion of Alternative 4 in Chapter 17, *Aesthetics and Visual Resources*.

Impact REC-5: Result in Long-Term Reduction of Recreational Fishing Opportunities as a Result of the Operation of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of operating the water conveyance facilities on recreational fishing opportunities under Alternative 5A would be the same as described under Alternative 4, because the same type of conveyance facilities would be built under Alternative 5A as under Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. Operation of Alternative 5A may result in changes in entrainment, spawning, rearing, and migration. However, effects on fish species that are popular for recreational fishing are not of a nature/level that will adversely affect recreational fishing. While there are some significant impacts on specific non-listed species, as discussed in Chapter 11, *Fish and Aquatic Resources*, they are typically limited to specific rivers and not the population of that species as a whole. The effect is not adverse because it would not result in a substantial long-term reduction in recreational fishing opportunities.

CEQA Conclusion: The potential impact on covered and non-covered sport fish species from operation of Alternative 5A would be considered less than significant because any impacts on fish and, as a result, impacts on recreational fishing, are anticipated to be isolated to certain areas and would not affect the abundance of popular sport fish.

Impact REC-6: Cause a Change in Reservoir or Lake Elevations Resulting in Substantial Reductions in Water-Based Recreation Opportunities and Experiences at North- and South-of-Delta Reservoirs

NEPA Effects: The methodology for assessing effects on recreation at major upstream storage reservoirs for Alternative 5A is the same as applied to Alternative 5 with the exception that Alternative 5A is evaluated at ELT and compared to the No Action Alternative at ELT (2025), whereas Alternative 5 was evaluated at LLT and compared to the No Action Alternative at LLT (2060). The results of this assessment are shown in Tables 15-25 and 15-26.

Existing Conditions (CEQA Baseline) Compared to Alternative 5A ELT (2025)

Under Alternative 5A Operational Scenario B recreation thresholds would be exceeded more frequently at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs relative to Existing Conditions. These changes represent a greater than 10% increase in the frequency the recreation thresholds are exceeded at Trinity, Shasta, Oroville, Folsom, and San Luis Reservoirs. However, as discussed in Section 15.3.1, *Methods for Analysis*, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes due to implementation of the action alternative using these model simulation results. Thus, the precise contributions of the external factors to the total differences between Existing Conditions and Alternative 5A ELT results cannot be isolated in this comparison. Please refer to the comparison of the No Action Alternative (ELT) to Alternative 5A for a discussion of the potential effects on end-of-September reservoir and lake elevations attributable to operation of Alternative 5A.

Existing Conditions (CEQA Baseline) Compared to Alternative 5A LLT (2060)

Existing Conditions compared to Alternative 5A LLT (2060) results are the same as described under Alternative 5.

No Action Alternative (ELT) Compared to Alternative 5A ELT (2025)

The comparison of Alternative 5A ELT results to the No Action Alternative (ELT) condition most closely represents changes in reservoir elevations that may occur as a result of operation of Alternative 5A because both conditions show external factors such as change in demand and sea level rise and climate change (see Appendix 5A, *BDCP/California WaterFix FEIR/FEIS Modeling Technical Appendix*). As shown in Tables 15-25 and 15-26, Alternative 5A would result in ELT changes in the frequency with which the end-of-September reservoir levels at Trinity, Shasta, Oroville, Folsom, New Melones, and San Luis Reservoirs would fall below levels identified as important water-dependent recreation thresholds. The CALSIM II modeling results indicate that reservoir levels under Alternative 5A operations would either not change or would fall below the individual reservoir recreation thresholds less frequently than under No Action Alternative (ELT) conditions at Trinity, Shasta and Oroville Reservoirs. Operation of Alternative 5A would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. Overall, these conditions represent improved recreation conditions under operation of Alternative 5A because there would be slightly fewer years in which end-of-September reservoir levels would fall below the recreation thresholds thus indicating better boating opportunities, when compared to No Action Alternative (ELT) conditions.

The modeling result for Folsom Reservoir indicates there could be up to 4 additional years under Alternative 5A, during which the reservoir level would fall below the reservoir's boating threshold at the end of September. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at Folsom Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. The reduction in surface elevations at Folsom Reservoir would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

The modeling result for New Melones Reservoir indicates that there could be up to 1 additional year under Alternative 5A, during which the reservoir level would fall below the reservoir's boating threshold at the end of September. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at New Melones Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. The reduction in surface elevations at New Melones Reservoir would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

The modeling results for San Luis Reservoir indicate there could be up to 13 additional years under Alternative 5A, during which the reservoir level would fall below the reservoir boating threshold at the end of September relative to the No Action Alternative (ELT) condition. This is a greater than 10% change and would be considered a substantial reduction in recreational boating opportunities at San Luis Reservoir. Shoreline fishing would still be possible, and other recreation activities at the reservoir—picnicking, biking, hiking, and fishing—would be available. The reduction in surface elevations at San Luis Reservoir would result in an adverse impact on recreation occurring at the reservoir by restricting access by boaters. Mitigation Measure REC-6 would be available to address this effect.

CEQA Conclusion: This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs would be less than significant because, with the exception of Folsom, New Melones, and San Luis Reservoirs, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 5A operations would stay the same (Shasta Reservoir) or would fall below the individual reservoir thresholds less frequently than under No Action Alternative (ELT). These changes in reservoir and lake elevations would result in a less-than-significant impact on recreation opportunities and experiences at Trinity, Shasta, and Oroville Reservoirs. At Folsom, New Melones, and San Luis Reservoirs, the reduction in reservoir access by boaters would be significant because they represent a greater than 10% change and could result in a significant impact on recreation. Mitigation Measure REC-6 would reduce this impact to a less-than-significant level

Mitigation Measure REC-6: Provide a Temporary Alternative Boat Launch to Ensure Access to San Luis Reservoir

Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable.

Table 15-25. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of-September Elevations below Recreation Thresholds) for Alternative 5A

	Recreation Threshold[a]								
	Trinity Lake <2,270 ft elevation			Shasta Lake <967 ft elevation			Lake Oroville <700 ft elevation		
Scenario	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative (ELT) (CEQA/ NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative (ELT) (CEQA/ NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative (ELT) (CEQA/ NEPA)
Existing Condition (CEQA)	21			17			17		
No Action Alternative (ELT)	32	11		22	5		26	9	
Alternative 5A (ELT)									
Operational Scenario B	29	8	-3	22	5	0	21	4	-5
Alternative 5A (LLT)									
Operational Scenario B	43	22		29	12		26	9	

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action Alternative ELT). A positive change would indicate more years with reduced recreation opportunities.

Table 15-26. Summary of Years with Reduced SWP and CVP Reservoir Recreation Opportunities (End-of September Elevations below Recreation Thresholds) for Alternative 5A

	Recreation Threshold[a]								
	Folsom Lake <405 ft elevation			New Melones Lake <900 ft elevation			San Luis Reservoir <360 ft elevation		
Scenario	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative ELT (CEQA/ NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative ELT (CEQA/ NEPA)	Years[b]	Change relative to Existing Condition (CEQA)[c]	Change relative to No Action Alternative ELT (CEQA/ NEPA)
Existing Condition (CEQA)	22			9			3		
No Action (ELT)	33	11		8	-1		9	6	
Alternative 5A (ELT)									
Operational Scenario B	37	15	4	9	0	1	22	19	13
Alternative 5A (LLT)									
Operational Scenario B	44	22		12	3		31	27	

[a] Recreation thresholds selected for the analysis represent the reservoir surface water elevation at which recreation opportunities become diminished due to restricted access to boat ramps, exposure of previously submerged islands or shoals that affect boater safety, and shoreline degradation.

[b] The number of years out of the 82 simulated when the September end-of-month elevation is less than the recreation elevation threshold for the selected alternative scenario. An elevation less than the recreation threshold indicates occurrences during which recreation opportunities may be diminished (see note a, above).

[c] The change values are the number of years of the simulated conditions that the selected alternative differs from the comparison condition (i.e., the Existing Condition or No Action ELT). A positive change indicates more years with reduced recreation opportunities relative to the comparison condition. A negative change indicates fewer years with reduced recreation opportunities relative to the comparison condition.

Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on water-based recreation under Alternative 5A would be the same as described under Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. These potential effects would occur as a result of regular maintenance activities of the intakes. The effect on boating is not considered adverse because the boat passage around the intakes would be maintained and disruption of boat access in the immediate vicinity of the intakes would be short-term.

CEQA Conclusion: Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes.

Impact REC-8: Result in Long-Term Reduction in Land-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities

NEPA Effects: The effects of maintaining the water conveyance facilities on land-based recreation under Alternative 5A would be the same as described under Alternative 4. However, impacts would be of slightly less magnitude because Alternative 5A would only include construction of Intake 2, rather than Intakes 2, 3, and 5 as under Alternative 4. Maintenance activities would be short-term and intermittent, occur within the immediate vicinity of water conveyance facility, and are not expected to generate noise that would distract from adjacent recreation opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of the proposed water conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would be short-term and intermittent and would not result in any changes to land-based recreational opportunities. Therefore, there would be no impact and no mitigation would be required.

Impact REC-9: Result in Long-Term Reduction in Fishing Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6, 7–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 5A would result in effects on fishing opportunities similar to those described for Alternative 4. The magnitude of the effects occurring under Alternative 5A would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions (Environmental Commitments 3, 4, 6, 7–12, 15, and16) occurring in the Plan Area would be much less than the conservation measures proposed under Alternative 4. Construction, operation, and maintenance of the conservation and stressor reduction components could have affects that would be similar in nature to those discussed above for construction, operation, and maintenance of proposed water conveyance facilities. Although similar in nature, the potential intensity of any effects would likely be substantially lower because the nature of the activities associated with implementing the conservation and stressor reduction components would be much less when compared to Alternative 4. In addition, the conservation and stressor reduction components would be expected to result in long-term benefits to aquatic species.

During the implementation stage, construction activity associated with the conservation and stressor reduction components could result in adverse effects on recreation by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would not be considered adverse because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance.

CEQA Conclusion: Conservation and stressor reduction components would be expected to improve fishing opportunities within the Plan Area. The adverse and beneficial impacts would be similar to those described under Alternative 4, however the extent of those impacts would be much less because the restoration actions occurring under Alternative 5A would include much less acreage and a smaller geographic scope than the conservation measures described under Alternative 4. The impact on fishing opportunities as the conservation and stressor reduction components are constructed would be considered less than significant because the actions would be small and localized. In the long term, the impact on fishing opportunities would be considered beneficial

because the conservation and stressor reduction measures could benefit aquatic habitat and fish abundance.

Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6, 7–12, 15, and 16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 5A would result in effects on boating-related recreation similar to the effects discussed under Alternative 4 for implementing conservation measures. However, the extent of the effects on boating under Alternative 5A would be much less because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less when compared to Alternative 4. Restoration of channel margin enhancement, riparian natural community, and nontidal marsh could provide increased boating opportunities within the study area.

CEQA Conclusion: Channel modification and other activities associated with implementation of some of the conservation and stressor reduction components may limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. However, overall the conservation and stressor reduction components would also lead to an enhanced boating experience by expanding the extent of waterways available to boaters. Overall, these measures would not be anticipated to result in a long-term reduction in boating-related recreation activities; therefore, this impact is considered less than significant.

Impact REC-11: Result in Long-Term Reduction in Upland Recreational Opportunities as a Result of Implementing Environmental Commitments 3, 4, 6, 7–12, 15, and16

NEPA Effects: Implementing conservation and stressor reduction components as part of Alternative 5A would result in effects on upland recreational opportunities similar to Alternative 4. However, the extent of these effects occurring under Alternative 5A would be much less than under Alternative 4 because the total acreage that would be affected by the conservation and stressor reduction actions occurring in the Plan Area would be much less. The actions could benefit the same types of recreation opportunities (e.g., hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing) as described for Alternative 4, however the recreational benefits accruing from these actions would be much less because of the smaller acreage that would be restored. Conversely, the conservation and stressor reduction actions could adversely affected established recreation activities that would no longer be possible or compatible with restoration. These potential adverse effects would be would be similar to those described under Alternative 4, however the effects are expected to be much less because of the smaller total acreage that would be restored.

Implementing the conservation and stressor reduction components could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities available to hiking, nature photography, or other similar activity. However, implementation of the measures would also restore or enhance new potential sites for upland recreation thereby potentially improving the quality of recreational opportunities.

CEQA Conclusion: Similar to Alternative 4, site preparation and earthwork activities occurring under Alternative 5A required to implement the conservation and stressor reduction components could temporarily limit or disrupt opportunities for upland recreational. These impacts on upland recreational opportunities would be considered less than significant because—similar to Alternative

4—environmental commitments incorporated into the project would require the project proponents to consult with CDFW to expand wildlife viewing, angling, and hunting opportunities as an element of the conservation and stressor reduction components. These components would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is considered less than significant.

Impact REC-12: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Recreation Resources

NEPA Effects: Similar to Alternative 5A, constructing the water conveyance facilities and implementing the conservation and stressor reduction components under Alternative 5A could result in incompatibilities with plans and policies that address recreation. A number of plans and policies that coincide with the study area provide guidance for recreation resource issues are overviewed in Section 15.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 5A is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate recreation effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. Such physical effects of Alternative 5A on recreation resources are addressed in Impacts REC-1 through REC-11, and in other chapters, such as Chapter 17, *Aesthetics and Visual Resources*, and Chapter 23, *Noise*. A summary of the compatibility evaluations related to recreation resources for plans and policies is contained in the analysis of Alternative 4 and is applicable to Alternative 5A. Generally the evaluation found that implementing Alternative 5A would not be compatible with some provisions of The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 and some policies of the Sacramento, San Joaquin, Contra Costa, and Alameda Counties general plans that address recreation.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects are discussed in Alternative 5A, impacts REC-1 through REC-11, and no additional CEQA conclusion is required related to the compatibility of the alternative with relevant plans and polices.

15.3.5 Cumulative Analysis

This section analyzes the potential for the alternatives to contribute to cumulative impacts on recreational facilities, opportunities, and resources in the Delta. This section first describes the cumulative setting for recreation in the Delta to identify the effects of other foreseeable projects and programs on recreational opportunities and resources. This section then describes the contribution of the impact mechanisms associated with the alternatives to determine if they would make a considerable contribution to the impacts on recreation in the Delta. Table 15-27 summarizes other foreseeable projects and programs that may affect recreation resources to provide a context for the evaluation of the cumulative effects on recreation opportunities. This list has been drawn from a more substantial compilation of past, present, and reasonably foreseeable programs and projects included in Appendix 3D, *Defining Existing Conditions, the No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*.

Table 15-27. Recreation Effects of Plans, Policies, and Programs Considered for Cumulative Analysis

Agency	Program/ Project	Status	Description of Program/Project	Recreation Effect
California Department of Water Resources	Delta Levees Flood Protection Program	Ongoing.	This is a grants program that works with more than 60 reclamation districts in the Delta and Suisun Marsh to maintain and improve the flood control system and provide protection to public and private investments in the Delta including water supply, habitat, and wildlife. The program, through its two main components (Delta Levees Maintenance Subventions Program and Delta Levees Special Flood Control Projects), works with the local agencies to maintain, plan, and complete levee rehabilitation projects.	Maintenance and rehabilitation of levees in the Delta will require construction that may temporarily disrupt recreational access to Delta waterways and fishing locations in the footprint of proposed repair and rehabilitation projects.
California Department of Water Resources	Dutch Slough Tidal Marsh Restoration Project	EIR certified in 2010, project is ongoing.	The Dutch Slough Tidal Marsh Restoration Project, located near Oakley in Eastern Contra Costa County, would restore wetland and uplands, and provide public access to the 1,166-acre Dutch Slough property owned by the Department of Water Resources (DWR). The property is composed of three parcels separated by narrow man-made sloughs.	The project would have a net benefit on recreational opportunities (DWR 2008: 3.11-12).
Department of Water Resources	Clifton Court Forebay Fishing Facility	Initial Study/ Proposed Mitigated Negative Declaration Completed in 2013.	The proposed project consists of installing a fishing pier extending approximately 500 feet into Clifton Court Forebay that is compliant with the Americans with Disabilities Act (ADA). Other appurtenant features to be installed include a staging area; concrete pad and retaining wall; security fencing, and gates; ADA-compliant public restroom; bicycle rack; equipment shed; ADA-compliant boat dock and road section on West Canal; two ADA-compliant parking spaces next to the Clifton Court Forebay public entrance gate; and lighting and signage.	The project would expand recreational fishing opportunities (DWR 2013).

Agency	Program/ Project	Status	Description of Program/Project	Recreation Effect
Bureau of Reclamation California and California Department of Water Resources	South Delta Improvements Program	Ongoing program. Final EIR/EIS 2006.	Project to increase water levels and improve circulation patterns and water quality while improving operational flexibility of the State Water Project	No adverse effects on recreation would result from the program (California Department of Water Resources and Bureau of Reclamation 2005:7.4-1).
California Department of Fish and Game (now CDFW), U.S. Fish and Wildlife Service, and Bureau of Reclamation	Suisan Marsh Habitat Management, Preservation, and Restoration Plan	Final EIS/EIR 2011.	The plan is intended to balance the benefits of tidal wetland restoration with other habitat uses in the Marsh by evaluating alternatives that provide a politically acceptable change in Marsh-wide land uses, such as salt marsh harvest mouse habitat, managed wetlands, public use, and upland habitat.	Effects on recreational opportunities would be beneficial or less than significant (California Department of Fish and Game et al. 2011:ES-28).
Bureau of Reclamation	Delta-Mendota Canal/ California Aqueduct Intertie	Completed in 2012.	The purpose of the intertie is to better coordinate water delivery operations between the California Aqueduct (state) and the Delta-Mendota Canal (federal) and to provide better pumping capacity for the Jones Pumping Plant. New project facilities include a pipeline and pumping plant.	No effects on recreation would result from the project (Bureau of Reclamation 2009:1-13).
Sacramento County	Sacramento County 2030 General Plan	The general plan document provides a template for growth in Sacramento County to 2030, including the portion of the County in the Delta. The general plan was approved in 2011, buildout is ongoing.	The plan identifies a potentially significant effect on recreational resources that will be mitigated to less than significant through in-lieu fees required under buildout to mitigate for additional demand for recreational facilities.	Effects on recreational facilities would be less than significant after mitigation (Sacramento County 2011:1-11).

Agency	Program/ Project	Status	Description of Program/Project	Recreation Effect
California Department of Water Resources and Bureau of Reclamation	Franks Tract	Delayed.	DWR and Reclamation propose to implement the Franks Tract Project to improve water quality and fisheries conditions in the Delta. DWR and Reclamation are evaluating installing operable gates to control the flow of water at key locations in the Delta. Boat passage facilities would be included to allow for passing of watercraft when the gates are in operation.	The scoping report identifies the potential for adverse effects on recreational boating (California Department of Water Resources 2009b:16)
National Marine Fisheries Service and U.S. Fish and Wildlife Service	2008 and 2009 Biological Opinions	Ongoing.	The Biological Opinions establish certain reasonable and prudent alternatives requiring habitat restoration to be implemented.	Construction of habitat may temporarily disrupt recreational access to Delta waterways and fishing locations in the footprint of proposed habitat restoration areas.
Department of Water Resources and Suisun Mash Preservation Agreement agencies	Miens Landing Restoration	Currently under study.	Restoration of duck clubs to tidal marsh.	Restoration could adversely affect waterfowl hunting opportunities and potentially benefit non-consumptive recreation.
Department of Water Resources	Cache Slough Area Restoration	Currently under study.	Restoration of lands within the Cache Slough Complex located in the Delta.	Conversion of lands from agriculture to wildlife habitat could benefit non-consumptive recreation. This project is examined as part of the BDCP alternatives and effects further described in the Draft BDCP.
Department of Water Resources	California Water Action Plan	Initiated in January 2014.	This plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes. In addition, the plan describes certain specific actions and projects that call for improved water management throughout the state.	Potential for beneficial and adverse effects on recreation resources.
Delta Conservancy	California EcoRestore	Initiated in 2015.	This program will accelerate and implement a suite of Delta restoration actions for up to 30,000 acres of fish and wildlife habitat by 2020.	Potential for enhanced recreation experience related to improved fish and wild life habitat conditions.

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15.3.5.1 Cumulative Effects of the No Action Alternative

The cumulative effect of ongoing projects, programs, and plans under the No Action Alternative is not anticipated to substantially change recreation opportunities or experiences in the Delta region. Effects on recreation would either be beneficial, or short-term disruptions that would be considered less than significant. Temporary adverse effects on water-dependent recreation include restrictions on boat passage and navigation and a decrease in recreational fishing as a result of loss of access to the water resources during construction and operation of in-water projects. Environmental conditions occurring within upstream rivers and reservoirs, the Delta, and ocean may adversely affect the abundance of sport-fish harvested within the Delta. Ongoing resources management plans may benefit water-dependent recreation by controlling nonnative aquatic vegetation, which would help maintain access to some Delta waterways that could otherwise be inaccessible because of the presence of dense aquatic vegetation. Ongoing restoration and environmental enhancement projects may benefit non-consumptive recreation within the Delta and enhance wildlife viewing, non-motorized boating, and other passive recreation opportunities by increasing wildlife habitat and public access. Land-based recreation activities are expected to increase in response to changes in local and regional demand and land management plans that may lead to the installation of additional recreational facilities. Projects and programs upstream of the Delta would have beneficial effects on recreation opportunities and experiences by increasing the abundance of sport fish. Conditions under the No Action Alternative would have more years in which reservoir levels fall below the recreation threshold relative to the existing condition due to sea level rise, climate change, and future no action conditions. The resulting inundation of many water-based facilities in the Delta would cause long-term adverse effects on recreation opportunities and experiences, but it is not possible to specifically define the exact extent of the changes due to future no action operations using model simulation results.

This survey of ongoing and foreseeable projects and programs in the Delta reveals that there is not an ongoing or cumulatively significant loss of recreational resources or opportunities in the Delta. While some projects such as levee repair projects or habitat restoration may temporarily impair or disrupt particular recreational facilities or locations, upon completion such projects do not result in a loss of recreational resources. Habitat restoration projects such as the creation of additional tidal marsh tend to have a net benefit on some recreational resources such as fishing opportunities because these projects increase the abundance of fish and areas that are useful for fishing. In addition, temporary effects simply displace recreational activities to alternative venues that are abundant in the Delta. The Delta Protection Commission performed an inventory of recreational facilities (1997), which describes 36 identified fishing access sites in the Delta and 106 marinas in the Delta.

Foreseeable land development in the region may result in some loss of recreational resources, however under typical general plan policies and state law, payment of in-lieu fees or dedication of land for parks and recreation is required for subdivisions for development (e.g., Cal. Government Code Section 66477).

The Delta and vicinity are within a highly active seismic area, with a generally high potential for future earthquake events along nearby and/or regional faults, and with the probability for such events increasing over time. Based on the location, extent and non-engineered nature of many existing levee structures in the Delta area, the potential for significant damage to, or failure of, these structures during a local seismic event is generally moderate to high. Levees constructed on liquefiable foundations are expected to experience large deformations (in excess of 10 feet) under a

moderate to large earthquake in the region. Earthquake damage could result in breaching/failure of existing levees within the Delta area, with a substantial number of these structures exhibiting moderate to high failure probabilities. The most immediate and significant effect to water quality under such a scenario would be the influx of large volumes of seawater and/or brackish water into the Delta, which would alter the "normal" balance of freshwater/seawater flows and result in flooding of the associated islands. The corresponding shift in Delta water quality conditions would be characterized by an increase in salinity levels, including specific associated constituents such as bromide (which affects total dissolved solids concentrations and can contribute to the formation of undesirable chemical byproducts in treated drinking water). (See Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies* for more detailed discussion). This could result in permanent displacement of existing, well-established public use or private commercial recreation facilities as well as result in long-term reduction of recreation opportunities, recreational navigation opportunities and recreational fishing opportunities. To reclaim land or rebuild levees after a catastrophic event due to climate change or a seismic event would potentially also result in adverse impacts to recreational resources. Although similar risks would occur under implementation of the action alternatives, these risks may be reduced by project-related levee improvements along with those projects identified for the purposes of flood protection in Table 15-27.

15.3.5.2 Concurrent Project Effects

Construction of the water conveyance facilities would have a wide range of significant adverse impacts on recreation occurring within the Plan Area. These include disruption of recreation activities occurring at formal public and private recreation sites, restricting boat access from some Delta channels, and reducing sport-fishing opportunities occurring within the Delta. These impacts were considered significant because of the importance of the recreation facility being affected or the long duration of construction. These impacts could be reduced, but not to a less-than-significant level by introducing a broad range of mitigation measures which address both the direct loss of access (REC-2) or indirect changes in environmental conditions including changes in visual character of the Delta (AES-1a through AES-1g and AES-4b AES-4c, and AES-4d), noise generated during construction (NOI-1a and NOI-1b), and conflicts with construction traffic (TRANS-1a through TRANS 1c). Other impacts on recreation were determined to not be significant.

Operation of the alternatives would also adversely impact recreation, including water-dependent activities occurring at major CVP and SWP water storage reservoirs and potential disruption of recreation within the Delta as a result of maintaining the water conveyance facilities. With the exception of San Luis Reservoir, operation of the alternatives would not substantially reduce recreation opportunities occurring at the major water storage reservoirs. The impact on boating at San Luis Reservoir would be considered significant because the reservoir surface elevation would fall below levels required to launch boats. This impact would be reduced to a less-than-significant level by implementing Mitigation Measure REC-6.

Conservation Measures 2–4 and CM6–CM11, or the similar Environmental Commitments under Alternatives 4A, 2D, and 5A, would also adversely impact recreation occurring within the Delta. However, the Environmental Commitments for Alternatives 4A, 2D, and 5A include substantially less acreage for restoration than would be restored under the BDCP alternatives with CM2–CM21; therefore, the impacts related to restoration would be less under Alternatives 4A, 2D, and 5A than under the BDCP alternatives. Conservation Measures and Environmental Commitments would both result in a significant impact on fishing opportunities and boating occurring within the Delta, but would be reduced to a less-than-significant level by implementing the mitigation measures

described above. The conservation measures are not expected to contribute to other impacts on recreation that would occur as a result of construction of the water conveyance facilities. These conservation measures would also not affect the operation of the alternatives and, consequently, would not affect recreation opportunities at major CVP and SWP water storage reservoirs.

The combined impact of constructing the water conveyance facility with implementing CM2–CM4 and CM6–CM11, or the similar Environmental Commitments under Alternatives 4A, 2D, and 5A, would increase the impacts on recreation resources and result in a significant impact on recreation within the Plan Area. These impacts include loss of boating and fishing opportunities. Concurrent recreation effects of conveyance facilities and Environmental Commitments under Alternatives 4A, 2D, and 5A would likely be much less than under BDCP alternatives because restoration actions under the non-HCP alternatives would be reduced compared with BDCP alternatives. However, the concurrent impacts would still be significant. For example, although Alternative 4 includes 65,000 acres of tidal wetland restoration, Alternative 4A includes 295 acres of tidal wetland restoration. While that is substantially less acreage, the 295 acres of restoration, when paired with the construction of the conveyance facilities, both in the Delta and Plan Area, would still result in a reduction of recreational navigation opportunities during construction of the conveyance facilities (Impact REC-3). When considered concurrently, impacts on water-based and navigational recreation would be significant. The long-term reduction of recreational opportunities and experiences (Impact REC-2) as a result of constructing the facilities and restoration would also be significant because construction would last more than 2 years. Because impacts on recreational fishing opportunities from construction of the water conveyance facilities (Impact REC-5) and from implementation of conservation measures/Environmental Commitments (Impact REC-9) would be less than significant, it is not anticipated that the combination of these activities would result in significant impacts. Similarly, because impacts on land-based and upland recreational opportunities from operation of the water conveyance facilities (Impact REC-8) and from implementation of conservation measures/Environmental Commitments (Impact REC-11) would be less than significant, it is not anticipated that the combination of these activities would result in significant impacts.

15.3.5.3 Cumulative Effects of the Action Alternatives

The following analysis reviews the contribution of the alternatives to this cumulative setting. This analysis first briefly reviews the contribution of impacts that are not adverse. While, in some instances, individual effects that are less than significant may cumulatively result in significant effects that are "cumulatively considerable" (see CEQA Guidelines Section 15065[a][3]), here, because there is not a cumulatively significant loss of recreational resources or opportunities in the Delta, these effects do not have the potential to result in a cumulatively considerable impact. Accordingly, the contribution of the following impacts are not carried forward for detailed analysis for their contribution to the cumulative setting.

- **Impact REC-5: Result in long-term reduction of recreational fishing opportunities as a result of the operation of the proposed water conveyance facility**
- **Impact REC-6: Cause a change in reservoir or lake elevations resulting in substantial reductions in water-based recreation opportunities and experiences at north- and south-of-Delta reservoirs**
- **Impact REC-7: Result in long-term reduction in water-based recreation opportunities as a result of maintenance of the proposed water conveyance facilities**

- **Impact REC-8: Result in long-term reduction in land-based recreation opportunities as a result of maintenance of the proposed water conveyance facilities**
- **Impact REC-9: Result in long-term reduction in fishing opportunities as a result of implementing** CM2–CM21
- **Impact REC-10: Result in long-term reduction in boating-related recreation opportunities as a result of implementing** CM2–CM21
- **Impact REC-11: Result in long-term reduction in upland recreational opportunities as a result of implementing** CM2–CM21

Impact REC-5 analyzes the potential for long-term reduction of recreational fishing opportunities as a result of operating the proposed water conveyance facility. Entrainment, spawning, rearing and migration may affect non-covered fish species that are popular for recreational fishing, but will typically be limited to specific rivers and not affect the population of a species as a whole, so it would not adversely affect recreational fishing.

Impact REC-6 analyzes the potential effects on water-based recreation at north and south-of-Delta reservoirs based on the predicted future operational conditions implemented under the BDCP modeled through CALSIM. Water-based recreation is primarily dependent on water levels in the relevant reservoirs and accordingly is not subject to cumulative effects in same manner as other resources. The impact analysis for REC-6 incorporates mitigation where necessary, and identifies no adverse effects after mitigation.

Impact REC-7 describes the potential for intermittent maintenance of conveyance facilities to disrupt water-based recreation. Because these activities are transitory in nature and would not substantially affect adjacent recreational opportunities, they would not combine with the effects of other projects to result in adverse cumulative effects on recreation.

Impact REC-8 analyzes the potential effect on land-based recreation associated with maintenance of proposed conveyance facilities. These activities would occur in the conveyance right-of-way and therefore would not disrupt adjacent or nearby recreational facilities. Because these effects would not occur in recreational opportunity areas they would not have the potential to combine with the effects of other projects to result in cumulative and adverse effects on recreation.

Impact REC-9 describes the potential changes to fishing opportunities that would result from the conservation components. Because implementing the proposed conservation components would be expected to provide beneficial effects on aquatic habitat and fish abundance this impact would result in a beneficial effect and does not have the potential to contribute to cumulatively significant impacts on fishing.

Impact REC-10 describes the effect that implementation of conservation measures would have on recreational boating opportunities. During construction, implementation of conservation measures may have localized adverse effects on recreational boating, but this effect would be transitory and is not considered significant. During the long-term, conservation measures would lead to an enhanced boating experience by expanding the extent of navigable waterways available to boaters, improving and expanding boat launch facilities, and removing nonnative vegetation that restricts or obstructs navigation. Because construction-related effects are temporary and because the overall effect is beneficial, this impact does not have the potential to contribute to a cumulative effect on recreational boating, given the diversity and abundance of alternative boating venues in the Delta.

Impact REC-11 describes the effect of conservation measures on upland recreation opportunities. While restoration activities may disrupt or displace some locations for upland recreation such as upland hiking, nature viewing, and photography, the conservation measures would also restore or enhance new potential sites for upland recreation and the measures would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. The combined effect on upland recreation is considered less than significant. Because the combined effect of the conservation measures would not diminish upland recreation opportunities, this impact would not contribute to cumulative effects on upland recreation.

Impact REC-16: Cumulative Displacement of Recreational Facilities

Alternative 9

***NEPA Effects*:** Construction of Alternative 9 fish screens and intakes for CM1 would result in the direct permanent loss of well-established recreation facilities: Boathouse Marina, Walnut Grove public guest dock, and Boon Dox guest dock, as described in Impact REC-1. While this project-level effect is adverse, it would not contribute to a cumulatively considerable loss of recreational resources in the Delta. The 106 identified marinas in the Delta provide an abundance of alternative venues for boating and mooring (Delta Protection Commission 1997). Foreseeable projects and programs identified in Table 15-27 do not typically identify adverse effects on recreation that could combine with this impact to result in a cumulative and adverse effect. This impact would not contribute to a cumulative and adverse loss of recreational facilities.

***CEQA Conclusion*:** Because the Delta has an abundance of alternative venues for boating and mooring, the loss of recreational facilities under Alternative 9 would not contribute to a cumulatively significant loss of recreational resources.

Impact REC-17: Temporary Disruption of Recreation Opportunities and Experiences as a Result of Construction Projects in the Delta

All Alternatives

***NEPA Effects*:** Construction of water conveyance facilities would result in temporary and adverse disruptions of recreational opportunities and experiences under all alternatives, as described in Impact REC-2. Specific effects include construction noise that would diminish the quality of the recreational experience and long-term loss of access to some facilities. While some mitigation is available such as noise abatement, this mitigation would not avoid all effects in all instances. Accordingly, Impact REC-2 is considered adverse for these alternatives. While the project-level impact would be adverse, the temporary loss of recreational facilities and quality would simply displace recreation to alternate venues that are accessible or higher in quality. While other ongoing projects and programs may also temporarily displace or diminish recreational opportunities and experiences, the size of the Delta and the diversity of recreational venues identified in the inventory of recreational facilities indicates the combined effect would not be cumulative and adverse (see Delta Protection Commission 1997). In addition, habitat restoration occurring under all alternatives and cumulative projects would also benefit non-consumptive recreation opportunities within the Delta.

***CEQA Conclusion*:** Because the Delta has a diversity of fishing and boating venues, the temporary loss of recreation facilities and recreational quality associated with the alternatives would not contribute to a cumulatively considerable effect. Temporary loss of access and diminished

recreational quality would be expected to displace recreation to abundant alternative venues in the region. The cumulative recreation impact of the projects and alternatives is not considered significant because of the diversity of recreation opportunities throughout the Delta, the temporary nature of most cumulative impacts and the benefit that will result from cumulative projects implemented under the California Water Action Plan (CWAP) and California EcoRestore program. Therefore, the proposed project would not result in a cumulatively considerable contribution to a cumulatively significant impact on recreational opportunities and resources.

Impact Rec-18: Temporary Alteration of Recreational Navigation

All Alternatives

***NEPA Effects*:** Impact REC-3 identifies adverse effects on recreational navigation under all project alternatives. Specific effects include navigational delays and disruption of some high-speed recreation such as waterskiing and wakeboarding. While this effect would be temporary, it is considered adverse because in the affected locations, the recreation activities would be entirely displaced. Although the effects on boating occurring during construction are temporary, they would be considered adverse because in the affected locations, the recreation activities would be entirely displaced. Mitigation Measure TRANS-1a is available to address this adverse effect. The other cumulative projects included in Table 15-27 are primarily land based and would not necessarily contribute to a combined adverse effect on boating that would occur during construction of the water conveyance facilities. While it is possible that other foreseeable projects may result in localized disruption of recreational navigation, these effects would not combine to result in a cumulative and adverse loss of recreational navigation opportunities. Because motorized boaters are by nature mobile, and because the Delta offers alternative venues for high-speed boating, this recreational activity could be pursued at other locations, which are anticipated to be available and abundant. The California Delta Chambers and Visitors Bureau identifies numerous venues for waterskiing and wakeboarding (2010b).

***CEQA Conclusion*:** The projects shown in Table 15-27 in combination with each action alternative would result in significant and unavoidable temporary effects on recreational navigation under all alternatives. Because the Delta offers numerous alternate venues for wakeboarding and waterskiing, and because other foreseeable projects and programs do not identify significant effects on water-based recreation, this impact would not contribute to a cumulatively considerable effect on recreational navigation. Mitigation Measure TRANS-1a would help reduce the impacts on boating occurring during construction but not to a less-than-significant level.

Impact REC-19: Temporary Effects on Recreational Fishing

All Alternatives

***NEPA Effects*:** Under all alternatives, effects on sport fish species would be less than significant, but construction would result in a temporary but long-term disruption of some recreational fishing locations, as described in Impact REC-4. The alternatives vary primarily according to the number of intakes, and thus the range of fishing locations that would be affected. Although the potential impact on covered and non-covered sport fish species from construction activities would not be adverse because the action alternatives would include several environmental commitments to avoid and minimize possible water quality and other temporary construction-related disturbances, the overall experience for anglers would be degraded because of elevated noise and degraded visual conditions.

In some instances, construction would last up to 5 years, resulting in a temporary but adverse disruption of recreational fishing for anglers and other recreational fishermen. Other foreseeable projects and programs may result in some temporary effects on fishing quality at localized fishing opportunities resulting from construction noise or loss of access. However, the Delta contains a wide range of identified fishing venues. The Delta Protection Commission identified 36 fishing access points in the Delta (Delta Protection Commission 1997). Additionally, informal access points also likely occur throughout the Delta. This cumulative fishing access impact is considered not adverse because of the amount and diversity of recreational fishing opportunities throughout the Delta, the temporary nature of most cumulative impacts and the benefit that will result from cumulative projects implemented under the CWAP and California EcoRestore program.

Mitigation Measures REC-2, AQUA-1a, AQUA-1b, NOI-1a, NOI-1b, and AES-1a through AES-g are available to reduce the adverse effect on recreational fishing.

***CEQA Conclusion*:** The BDCP would result in significant and unavoidable temporary effects on fishing by disrupting access or degrading fishing quality through construction-generated noise under all alternatives. Cumulative fishing access impacts are considered less than significant because combined cumulative projects would mainly include temporary land-based construction effects, fishing access in the Delta is plentiful and other cumulative projects such as those implemented under the CWAP and California EcoRestore program could benefit fishing and other recreational opportunities in the Delta.

Impact REC-20: Permanent Alteration of Recreational Boat Navigation

Alternative 9

***NEPA Effects*:** Under Alternative 9 the construction of conveyance facilities would result in adverse effects on recreational boat navigation as a result of the construction of operable gates, as described in Impact REC-14. While construction of boat passage facilities and implementation of Mitigation Measures REC-14a and REC-14b would reduce this effect, the effect would remain adverse. While most foreseeable projects in the Delta would not result in permanent alteration or disruption of navigation, some planned projects such as Franks Tract, may result in adverse effects on recreational boating through construction of similar operable gates (California Department of Water Resources 2009a:16). Collectively these effects would result in a cumulative and adverse alteration of recreational boat navigation.

***CEQA Conclusion*:** Alternative 9 would result in a significant and unavoidable impact associated with alteration of recreational navigation where operable gates would be constructed. While some boat passage facilities would be constructed, delays would nonetheless result. Because the construction of other operable gates at Franks Tract has the potential to disrupt recreational boat navigation a significant cumulative condition may result from the combined effects of these projects. While construction of boat passage facilities and implementation of Mitigation Measures REC-14a and REC-14b would reduce the contribution of the BDCP, Impact REC-14 would remain significant and unavoidable, thus contributing to a cumulatively significant impact.

Impact REC-21: Changes to Other Recreation Opportunities

Alternative 9

***NEPA Effects*:** Under Alternative 9 permanent speed zone restrictions in the vicinity of operable gate and boat passage facilities would limit high-speed recreation opportunities, such as waterskiing, wakeboarding, and tubing at three locations, as described in Impact REC-13. Table 15-18 identifies specific facilities that would be affected. Additional effects include the potential loss of one mooring facility and one location supporting pass-through traffic. While project-level effects would be reduced with Mitigation Measures REC-14a and REC-14b, the effect would remain adverse despite mitigation. However, because there are numerous alternative venues that support recreational high-speed boating, this loss is not expected to contribute to a cumulatively significant effect. In addition, most other foreseeable projects and programs identify impacts on recreation as less-than-significant. Because there are alternative venues for waterskiing and wakeboarding, and because other foreseeable projects would not result in a cumulative loss of these opportunities, this impact would not be adverse.

***CEQA Conclusion*:** Alternative 9 would result in significant and unavoidable effects on high-speed recreational boating at three locations where speed-restrictions would be enforced, and would also result in the loss of one mooring facility and one portion of Threemile Slough to boat traffic. Because the number of facilities lost is small in relation to the number of recreational venues in the Delta, and because other foreseeable projects identified in Table 15-27 above do not typically identify significant effects on recreation, this contribution to the loss of venues for high-speed boating would not be a cumulatively considerable contribution to a cumulatively significant impact.

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15.4.2 Personal Communications

Cadd, D. Statewide Coordinator. Landscape Architecture Program/California Department of Transportation, Sacramento, CA. February 23, 2009—Telephone conversation with Sarah Heard, EDAW, San Francisco, CA, regarding Officially Designated County Scenic Highway in Sacramento County.

De La Rosa, G. Program Technician. California Department of Fish and Wildlife. Sacramento, CA. January 30, 2012—Telephone conversation with Barbara Wolf, ICF International, Sacramento, CA, verifying that Suisun Marsh Hunting Preserve did not renew its license for the 2011 season.

Gehlke, Roni. Executive Director. Delta Science Center. Oakley, CA. January 30, 2012—Telephone conversation with Barbara Wolf, ICF International, Sacramento, CA, explaining relationship of Delta Science Center, Delta Discovery Area, and Big Break Regional Trail.

Springer, Scott. Outdoor Recreation Planner. U.S. Bureau of Reclamation. Sacramento, CA. August 2, 2013. Lead Agency reviewer comment clarifying number of visitors to New Melones Lake.