

Section 18

Recreation

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3 This section describes recreational opportunities in the study area and the potential changes that could
4 occur as a result of implementing the Delta Plan and the project alternatives. This section describes the
5 associated study area, the environmental setting, the significance of potential environmental impacts, and
6 mitigation measures.

7 The Delta Plan (the Proposed Project) does not propose implementation of any particular physical project;
8 rather it seeks to influence, either through limited policy regulation or through recommendations, other
9 agencies to take certain actions that will lead to achieving the dual goals of Delta ecosystem protection
10 and water supply reliability. Those actions, if taken, could lead to physical changes in the environment.
11 This is described in more detail in part 2.1 of Section 2A, Proposed Project and Alternatives, and in
12 Section 2B, Introduction to Resource Sections.

13 The types of changes that could impact recreational resources include: land use changes; conversion of
14 agricultural lands, wetland, and other habitat types; land fallowing, levee construction or reconfiguration,
15 and construction or reconstruction of water and wastewater treatment plants; conveyance facilities and
16 pumping plants; surface water and groundwater storage facilities; ecosystem restoration projects; and
17 recreation facilities. These types of activities could alter, damage, or destroy existing recreational
18 resources resulting in an impact on these resources. For example, construction of new water conveyance
19 facilities within the Delta could impact existing recreation facilities or activity areas, such as marinas or
20 waterways that support boating.

21 Construction and operations-related impacts on recreational resources could be potentially significant
22 depending on various project- and site-specific factors that are presently undefined. The Delta
23 Stewardship Council does not have authority to require the adoption of mitigation in all cases. Therefore,
24 some construction and operations-related activities taken by other agencies on the basis of Delta Plan
25 recommendations (i.e., activities that are not covered actions), may not be mitigated to a
26 less-than-significant level. This section evaluates and discloses the significance of recreation impacts
27 before and after the implementation of mitigation measures.

28 18.1 Study Area

29 The recreation study area includes the Delta and Suisun Marsh and areas with recreational opportunities
30 in the Delta watershed and areas outside the Delta that use Delta water. This includes areas outside the
31 Delta and Suisun Marsh that could be affected by State Water Project (SWP) and Central Valley Project
32 (CVP) Delta operations, as discussed in Section 3. As described in Section 2A, Proposed Project and
33 Alternatives, facilities could be constructed, reconstructed, modified, or reoperated in the Delta, Delta
34 watershed, or areas located outside the Delta that use Delta water.

18.2 Regulatory Framework

Appendix D provides an overview of the plans, policies, and regulations relating to recreation within the study area.

18.3 Environmental Setting

This section describes the recreation experience in the Delta and Suisun Marsh and areas with recreation opportunities within the Delta watershed and Delta service area; local, State, and federal regulatory framework for modifications of recreation facilities; existing conditions of recreation in the Delta and Suisun Marsh by recreation type; and recreation resources.

18.3.1 Major Sources of Information

Information regarding recreational resources was obtained from published sources and personal contacts with federal, State, and local agencies. This section relied on several existing recreation planning documents, including the aquatic recreation component of the Delta Recreation Strategy Plan (DPC 2006a) and the Sacramento-San Joaquin Delta Boating Needs Assessment (2000-2020) (DBW 2002). Both of these studies relied on data from the Inventory of Recreation Facilities (DPC 1997) and Sacramento-San Joaquin Delta Recreation Survey (State Parks 1997a).

18.3.2 Delta and Suisun Marsh

The Delta and Suisun Marsh provide extensive recreational opportunities through their natural and manmade resources, numerous waterways and landside destinations. Recreation in the Delta is diverse, taking advantage of the geographic complexity and physical resources.

The Delta and Suisun Marsh area is at the confluence of two major rivers, creating a mixture of meandering rivers and waterways, back bays, and ship channels. These waterways support numerous attractions, including parks, wildlife areas, campgrounds, marinas, small communities, historic sites, and agricultural islands with farm markets and wineries. The area covers approximately 839,640 acres, and more than 1,335 linear miles of waterways and channels.

The scenic and recreational values of the Delta were recognized in the 1928 California State Park Survey by Frederick Law Olmsted:

One of the most striking examples I have observed in California of the possibilities of conserving and utilizing scenic and recreational resources as a secondary but important incident of public control of land exercised primarily for other ends is in connection with the flood-plain portion of the Sacramento River and its tributaries. (California State Parks Commission 1929, p. 25).

Subsequent studies completed by California State Parks, California Department of Water Resources (DWR), DBW, California Department of Fish and Game (DFG), and Delta Protection Commission (DPC) identified opportunities for expansion of the state park system, including the acquisition and development of Brannon Island State Recreation Area and Franks Tract. These efforts, along with others by local and federal agencies, trace the increasing and evolving recreation visitation and provide recommendations for the future.

The Delta links the San Francisco Bay area and the Central Valley. It is surrounded by cities and urbanizing areas, some of which have historic roots at the edge of the Delta and the two primary rivers. A survey conducted by DBW in 2000 indicated that 77 percent of the boat owners who boated in the

1 Delta at the time of the survey resided in the Primary Market Area.¹ An additional 8 percent of the boat
2 owners who responded as having recently boated in the Delta resided in the Secondary Market Area.²

3 For many people, the Delta is a place to slow down and relax. Boating is enjoyed by many who live in
4 and visit the Delta. The Sacramento-San Joaquin Delta Boating Needs Assessment (DBW 2002, p. 1-3)
5 estimated 6.4 million annual boating-related visitor days and 2.13 million boating trips to the Delta in
6 2000. The Delta also is one of California's most important fishing and waterfowl hunting resources, a
7 place with rich natural habitats for bird watching and nature study, and a scenic place to meander, and
8 explore by boat or car.

9 The Delta is also connected with numerous other recreation venues throughout the state. It is a popular
10 destination for those who have boats berthed in San Francisco Bay. Numerous park, recreation, and
11 wildlife spaces are located along upstream waterways and reservoirs. Additionally, Delta water is
12 conveyed to reservoirs in the San Francisco Bay Area, San Joaquin Valley, and southern California that
13 provide for public access and recreation. Most of these reservoirs that receive water out of the Delta are
14 within or near the state's principal metropolitan areas and provide important resource-based recreation³ to
15 these population centers.

16 *18.3.2.1 Recreational Use Categories*

17 Recreational uses in the Delta can be grouped into four general categories. However, there is a great deal
18 of overlap among activities and user groups, and it is the mix of all the categories that makes the Delta
19 special. For instance, boaters and non-boating visitors may play golf at a course on the edge of the Delta,
20 visit a wildlife area or historic site, sample local wines at a winery, or enjoy a meal at a restaurant in one
21 of the legacy communities. The four categories are:

- 22 1. Waterway and Related Land-Based Recreation: The DBW estimated 6.4 million annual
23 boating-related visitor days and 2.13 million boating trips to the Delta in 2000 (DBW 2002,
24 p. 1-3). The Delta's waterways are a setting for vastly different recreation experiences, from
25 major rivers and open water to backwater sloughs and ephemeral streams that allow for many
26 water-based activities, including sailing, waterskiing, and power boating using large (longer than
27 26 feet) and small crafts; using personal watercraft (PWC); canoeing, kayaking, and windsurfing;
28 and other water-based activities. Additionally, it is one of the state's most important fishing areas,
29 including bank fishing and fishing from watercraft. Most landside recreation activities and
30 facilities are directly related to the water. The Delta's ambience also attracts day use and
31 overnight stays. Such use could grow over time as surrounding populations increase.
- 32 2. Wildlife-Oriented Recreation: Waterfowl hunting and wildlife viewing occurs in state wildlife
33 areas and recreation areas. The most significant levels take place in Suisun Marsh and throughout
34 the Delta on private hunting operations, on private farmland managed for joint use, and
35 publically-owned lands. State and federal wildlife areas also receive significant numbers of
36 visitors, including school groups, oriented towards nature study and bird watching.
- 37 3. Delta-As-A-Place Visitation: Many visitors come to the Delta to relax, explore the byways and
38 legacy communities, buy local produce, and visit its wineries and other local attractions. As part

¹ The Primary Market Area includes the counties of Alameda, Calaveras, Contra Costa, Marin, Napa, Sacramento, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, and Stanislaus (DBW 2002, p. 6-6).

² The Secondary Market Area includes the counties of Amador, Colusa, El Dorado, Lake, Mariposa, Mendocino, Merced, Monterey, Placer, San Benito, Sonoma, Sutter, Tuolumne, and Yolo (DBW 2002, p. 6-6).

³ Two basic types of parkland exist: developed park areas where provision and encouragement of recreation use are paramount, and resource-related park areas where recreation relates to and is dependent on historic or natural resources. Protection and enhancement of the resource is vital to resource-based recreation. In this report, recreation area will refer to resource-based recreation unless otherwise referred to as developed recreation area.

1 of their visits, they may use public day use facilities, stay in a historic hotel, or attend a
2 special event.

3 4. Urban Edge Recreation: Communities on the edge of the Delta have begun to adopt strategies that
4 create recreation-oriented land uses along the edge between the community and the Delta. Uses
5 include traditional city parks, as well as marinas, trails, and other day use and wildlife-oriented
6 activities, but all are enhanced by being located on the edge of the Delta.

7 Recreational users of the Delta primarily come from the surrounding 13 counties, known as the Primary
8 Market Area. As shown on Figure 18-1, boaters from within this zone account for approximately
9 75 percent of all boating trips to the Delta (DBW 2002, p. 4-7). However, the Delta waterways are a
10 resource of statewide significance as evidenced by origin studies showing visitation from more than
11 30 California counties, from as far away as San Diego and Shasta counties (DBW 2002, Table 4-2,
12 p. 4-6).

13 Recreational facility types tend to be clustered within areas most conducive to the individual recreation
14 activity. The Delta is unique as a recreation destination in that developed facilities for most activities are
15 located on private land, with the exception of wildlife viewing and urban edge recreation areas. In
16 particular, most visitor facilities for boaters are private and located on private land, while the waterways,
17 where most boating activities take place, are public.

18 Public agencies and non-governmental organizations that own or operate recreational facilities in the
19 Delta and Suisun Marsh include U.S. Fish and Wildlife Service (USFWS); State Parks, DFG, and DWR;
20 East Bay Regional Parks District; counties and cities within the Delta; the Solano Land Trust; Suisun
21 Resource Conservation District; and The Nature Conservancy.

22 ***18.3.2.2 Types of Recreation and Recreational Facilities***

23 **18.3.2.2.1 Waterway and Related Land-based Recreation**

24 *Boating*

25 Boating and water-dependent recreation represent the highest percentage of existing recreational activities
26 in the Delta (Figure 18-2). In the 2002 DBW study, annual boating-related visitor days to the Delta were
27 estimated at 6.4 million in 2000, with a projected growth to 8 million visitor days by 2020 (DBW 2002,
28 Table 6-11).

29 Water-based recreationists are generally divided by boat size because of the facilities required and the
30 activity limitations for each. Larger boats (non-trailerable, sail or motor boats longer than 26 feet) include
31 powerboats, sailboats, and houseboats. Most larger boats are birthed at marinas or yacht clubs within or
32 adjacent to the Delta. Typical activities that these boaters engage in include cruising, exploring
33 waterways, sailing, wildlife viewing, socializing, and fishing. Small boats (trailerable, including
34 motorized and non-motorized boats less than 26 feet in length) include a wide variety of watercraft, such
35 as powerboats, PWC, sailboats, sailboards, canoes, and kayaks. Smaller boat recreationists tend to prefer
36 destinations where they can get off their boat and use the shorelines. Typical activities include fishing,
37 cruising, swimming, camping, waterskiing, windsurfing, and wakeboarding (DBW 2002, pp. 3-1 to 3-12,
38 Figure 4-5, p. 4-13).

39 The aquatic recreation component of the Delta Recreation Plan described 635 linear miles and almost
40 90 square miles of contiguous waterways in the Delta (DPC 2006a, pp. 32-45). According to a 2001
41 survey (DBW 2002, p. 5-4), there were 95 public and private marinas within the Primary Zone, with more
42 than 11,000 boat slips, more than 2,000 campsites, 324 day-use picnic facilities, and 78 launch ramp
43 lanes. The DPC identified 55 different popular aquatic recreation spots in the Delta, including access
44 points, aquatic hunting areas, waterskiing and wakeboarding locations, fishing, and the Delta Meadows
45 (DPC 2006a, pp. 47-54).

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- 1 **Figure 18-1**
- 2 **Primary Market Area of the Delta**
- 3 *Source: DFG 2006*

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1 Figure 18-2

2 Waterway and Related Land-based Recreation in the Delta and Suisun Marsh

3 Sources: *California Chambers & Visitors Bureau 2010; California Federation of Certified Farmers' Markets 2010; Clarksburg*

4 *Wine Growers 2010; Discover the Delta Foundation 2010; DBW 2011; DFG 2011a; DPC 2006b; Lodi Wine Country Trail*

5 *Map 2010; Reclamation 2010; Solano County 2011; Yacht Club Guide 2011*

1 Boating in the Delta tends to be clustered in various zones, due to the complexity of settings, water
 2 depths, microclimates, and physical resources. Table 18-1 and Figure 18-3 delineate the Delta's recreation
 3 zones. Additionally, activities tend to cluster based on resources. Sailing and wind-surfing occur in the
 4 west Delta where winds are dominant, whereas waterskiing and wakeboarding tend to occur in southern
 5 areas that have calm waters that are sheltered from winds. More than half the marinas in the Delta and
 6 developed recreational facilities are in the West Zone or Delta Breezeway, so a large amount of cruising
 7 and social recreation activities occur in this area. The Central Zone or "Delta Hub" contains Delta
 8 Meadows and other land-based camping areas. Table 18-1 provides a summary of facilities and resources
 9 by recreation zone. Multi-day visits by nearly all categories of users include a certain amount of cruising
 10 and exploring the different waterways and channels of the Delta.

Table 18-1
Summary of Existing Boating Facilities and Resources by Recreation Zone

Location and Name	Number of Marinas	Number of Boat Slips	Water Features	Typical Types of Recreation	Unique Features
North: The Northern Delta Gateway	8	988	Major channels provide linkages to other zones	Cruising, fishing, and channel exploring	Discovery, Park, Old Sacramento, Stone Lakes Wildlife Preserve
Northwest: The Bypass	1	76	Yolo Bypass, shipping channel, and extensive tidal margin lands	Mostly land based hunting and wildlife viewing	Extensive natural and restored habitat areas
Central: The Delta Hub	12	1,271	Many navigable channels, some circular; the Delta Cross- Channel	Cruising, fishing, water-skiing, camping, sailing	Cosumnes River Preserve, Delta Meadows
West: The Delta Breezeway	56	5,990	Gateway to San Pablo and San Francisco bays, many inundated islands	Wind surfing, sailing, fishing	Brannan Island, Bethel Island, Big Break Interpretive Area
East: The San Joaquin Delta Corridor	13	2,786	Numerous main river flows, channels, channel islands, sloughs, City of Stockton	Fishing, sailing	Mildred Island, several yacht clubs
South: The Southern Delta Reaches	5	563	Sheltered and quiet waters, Clifton Court Forebay, regulated water flows, many congested channels	Waterskiing, wakeboarding, fishing	Discovery Bay, many areas sheltered from wind by Diablo Range
Suisun Marsh	0	0	Open marsh expanse, Grizzly Bay, Suisun Bay, Honker Bay	Hunting, fishing, kayaking, canoeing, wildlife viewing	Suisun Marsh, Grizzly Island Wildlife Area

Sources: BCDC 1976; DBW 2002, Table 2-1, p. 2-5

- 1 **Figure 18-3**
- 2 **Recreation Zones in the Delta Zones and Suisun Marsh**
- 3 *Source: State Parks 1997b*

1 Trends in recreational activity levels in the Delta over the last 20 years can be estimated by considering
 2 boat registrations within the Primary Market Area (shown on Figure 18-1) and recreational use surveys.
 3 The 2002 Sacramento-San Joaquin Delta Boating Needs Assessment (DBW 2002, pp. 6-5 to 6-11)
 4 discussed trends in boating in California. Overall, it appeared that boat registration from 1980 to 2000
 5 tended to be growing with overall population growth. Within this overall trend, PWC registration was
 6 rising much faster than population growth, with other types of smaller boats increasing at a much lower
 7 rate and large boats increasing at a slightly higher rate. This trend in registration matches the trends in
 8 marinas reported in the same study, as many marinas were upgrading smaller slips to larger slips to match
 9 demand (DBW 2002, p. 6-14). Since 2000, the general trend in boat registration has been steady statewide
 10 and slightly declining within the Primary Market Area. Table 18-2 lists boating registration over the past
 11 10 years.

Table 18-2
Total Vessel Registrations by Year within the Delta Primary Market Area and Statewide

Year	Primary Market Area	Statewide	Personal Watercraft*
2000	252,673	902,447	169,373
2001	266,517	961,877	180,397
2002	249,913	893,550	157,090
2003	265,295	959,849	183,266
2004	243,869	892,594	158,866
2005	257,857	956,466	185,115
2006	239,824	896,794	161,417
2007	252,855	955,730	170,421
2008	226,769	855,290	—
2009	237,229	900,345	—

Source: DBW 2010

* PWC data are available through only 2007.

12 Although the number of boat registrations varies by year, the overall trend since 2000, including PWCs, is
 13 generally flat to declining. The State Parks Surveys on Public Opinions and Attitudes on Outdoor
 14 Recreation in California indicates that the percent of respondents participating in activities has declined
 15 from 2002 to 2008 in sail boating (10.4 percent versus 5.9 percent) and motor boating (PWC)
 16 (42.7 percent to 14.8 percent) (State Parks 2009a, pp. 33-34). These survey results may have been
 17 influenced by the recent recession.

18 Different water-based recreation requires different types of facilities. According to the summary of survey
 19 results provided by DBW (2002, pp. 3-1 to 3-12), large boat users require fuel stations, pump-out sites,
 20 berthing sites, supply facilities, yacht clubs, courtesy docks, and land-side destinations such as restaurants
 21 and shops. Small boat users have a slightly different list of required or preferred facilities, including
 22 restrooms, day-use areas, beaches, town docks, launch ramps, fuel stations, campgrounds, and parking
 23 lots. Additionally, specific recreational user groups have different facility requirements and/or preferences
 24 (Table 18-3).

Table 18-3
Summary of Required Boating Facilities by Recreational User Group

Recreational User Group	Preferred/Required Facilities
Fishing	Launch ramps, campgrounds, restrooms, day-use facilities with fishing access
Waterskiing/Wakeboarding	Launch ramps, local dry stack storage/berthing, waterside restrooms, beaches, parks (day-use areas), marinas
Windsurfing	Water-access ramps, campgrounds, food and services, restrooms, parking areas, showers
Waterfowl Hunting	Car-top launch sites, parking areas, restrooms (both shore and floating)
Canoe/Kayak	Launch points, restrooms, parking areas
Personal Watercraft	Launch ramps, restrooms, parking areas
General	Restrooms, fuel, launch ramps, marinas, day-use facilities, beaches, public docks

Source: DBW 2002

1 In addition to these basic requirements, boaters indicated their perceived needs and preferred
 2 enhancements as:

- 3 " Restrooms along primary corridors and at destination areas for motorized and non-motorized
 4 boating users
- 5 " Boat accessible, family-oriented day use areas, including restrooms, picnic and camping areas,
 6 moorages, and beaches
- 7 " Designated overnight mooring areas
- 8 " Town-site courtesy docks, allowing boaters to visit historic facilities, restaurants, etc.
- 9 " Public non-motorized boating access
- 10 " Pump out stations
- 11 " Additional launch ramps
- 12 " Fuel docks

13 Detailed facility replacements, upgrades, and repairs needed or desired by marina owners were also
 14 included in the Delta Boating Needs Assessment of 2002 (DBW 2002, Chapter 6).

15 *Fishing*

16 The most recent information on fishing in the Delta is from a 1997 survey conducted by State Parks
 17 (State Parks 1997a, p. 138). The 1997 survey found that approximately 23 percent of all licensed anglers
 18 in the state recreated in the Delta. Out of the respondents, 88 percent reported fishing from a boat,
 19 74 percent reported fishing from shore, and 14 percent reported fishing in a tournament (State Parks
 20 1997a, p. 77-78). Similar to boating, fishing varies dramatically among the six different zones of the
 21 Delta, with the highest number of respondents fishing in the West or "Delta Breezeway" zone, followed
 22 by the East or "San Joaquin Delta Corridor." The Northwest Zone or "Bypass" had the lowest percentage
 23 of respondents (State Parks 1997a, p. 81). Fishing was reported highest on weekend days, and April
 24 through October (State Parks 1997a, pp. 79-80). Major sport fish include American Shad, Bass
 25 (Striped, Smallmouth, Largemouth, and Spotted), Black Crappie, Chinook salmon, Catfish, Steelhead,
 26 Sunfish, Tule Perch, Warmouth, and White Sturgeon (DPC 2011a). Respondents to the 1997 survey also
 27 identified the non-fishing recreational activities that they participated in while in the Delta. Sightseeing,

1 boating, and viewing wildlife had the highest percentage of respondents, followed by walking for
2 pleasure, picnicking, attending special events, and photography (State Parks 1997a).

3 More recent information available on fishing licenses issued statewide was used to estimate current
4 fishing in the Delta⁴. In 1997, California issued approximately 1.4 million resident sport fishing licenses
5 statewide (Table 18-4). In 2009, fewer licenses were issued – approximately 1.2 million licenses
6 statewide (DFG 2010). Other statewide surveys indicate a decline in fishing activities. The most recent
7 State Parks survey indicated that both freshwater and saltwater fishing participation has declined since the
8 previous survey in 2002 (State Parks 2009b, p. 34). A USFWS survey indicated that fishing by anglers in
9 the state has declined from more than 2.7 million in 1996 to slightly more than 1.7 million in 2006
10 (USFWS and U.S. Census Bureau 2006, p. 14).

Table 18-4
Total Resident Sport Fishing Licenses by Year Statewide with Estimates on Delta Use

Year	Statewide	Delta *
1997	1,384,963	318,541
1998	1,287,668	296,164
1999	1,272,284	292,625
2000	1,265,039	290,959
2001	1,225,072	281,767
2002	1,175,618	270,392
2003	1,124,438	258,621
2004	1,268,606	291,779
2005	1,244,987	286,347
2006	1,256,785	289,061
2007	1,283,506	295,206
2008	1,203,670	276,844
2009	1,179,312	271,242

Source: DFG 2010

* It is estimated that approximately 23 percent of all statewide anglers recreate in the Delta (DPC 2006a, p. 138).

11 Respondents to the 1997 survey also identified the non-fishing recreational activities that they
12 participated in while in the Delta. Sightseeing, boating, and viewing wildlife had the highest percentage of
13 respondents, followed by walking for pleasure, picnicking, attending special events, and photography
14 (State Parks 1997a).

15 *Land-based Recreation*

16 Most recreation in the Delta is related to fishing and boating and other aquatic recreation; however, there
17 is a small percentage of land-based recreation that is not water related, but instead to the setting and
18 facilities of the Delta. Such uses include camping, hiking, biking, other trail use, using open turf areas,
19 and picnicking.

⁴ Based on the 1997 survey finding that approximately 23 percent of all licensed anglers in the state recreated in the Delta (State Parks 1997a).

1 In a 1995 study, updated in 1997, the DPC identified 43 camping facilities. Most of these were associated
2 with larger marinas and other multi-use sites. The DPC also identified 24 multi-use facilities that offered
3 day-use/picnic sites, and an additional five public day use sites with picnic facilities in the Primary Zone
4 (DPC 1997, p. 50).

5 The 2000 survey associated with the DBW study identified 324 day-use picnic sites available at
6 46 marinas, with 2,182 camping or RV sites at 48 marinas (DBW 2002, Table 5-3). Brannon Island State
7 Park is one of the largest public facilities in the Delta, offering three group picnic sites, 300 general picnic
8 sites, 78 miles of non-motorized trails, grassy areas, a campground with 102 developed sites, and
9 six group camping sites. In fiscal year 2008-2009, State Parks counted more than 36,000 campers, with an
10 additional 88,000 day-use visitors (State Parks 2010, pp. 20-21).

11 Passed in 2006, Senate Bill 1556 (Torlakson) requires the DPC to establish “a continuous recreation
12 corridor, including bicycle and hiking trails, around the delta.” The bill also requires the Great Delta Trail
13 to link the San Francisco Bay Trail system to planned Sacramento River trails in Yolo and Sacramento
14 counties. The Great Delta Trail is in the planning process. The Great California Delta Trail Blueprint
15 Report for Contra Costa and Solano Counties identifies recreational issues that include public safety and
16 liability, private property impacts and liability, property access, agricultural resources, levee integrity and
17 maintenance, water quality, and environmental resources (DPC 2010, p. 4-1).

18 In 2007, Assembly Bill 1426 required State Parks to develop the Central Valley Implementation Plan.
19 One portion of the plan focused on the Delta and states the following (State Parks 2009b, p. 26):

20 *To meet growing demand, existing units will be improved and the Delta’s “sense of place”*
21 *enhanced. Initiatives, which are consistent with the Governor’s Delta Vision Committee*
22 *recommendations, are:*

23 “ *Develop 320-340 campsites, about 175 picnic sites and 700-750 acres of land; restore about*
24 *500 acres of wildlife habitat.*

25 18.3.2.2.2 Constraints Related to Aquatic Recreation

26 The Aquatic Recreation Component of the Delta Recreation Strategy Plan (DPC 2006a, pp.56-69)
27 identified several constraints on aquatic recreation in the Delta, many of which may be affected by the
28 Delta Plan (also DBW 2002, pp. 3-14 to 3-18). Some of the key issues include:

- 29 1. Water gates, screens, and barriers. The Delta Cross Channel and gates in Walnut Grove have
30 become an important link for recreational boaters. Although originally built just for water
31 management, the channel, when open, allows for direct access to some of the most popular areas
32 in the Delta. In recent years, it has been open most days of the year, but operation periods are
33 variable and boaters typically do not know in advance whether it will be open or not. In addition,
34 its dimensions do not allow for use by larger boats or sailboats (DPC 2006a, p. 60).
- 35 2. Sediment accumulation in channels, waterways, and marinas: Sediment deposits and siltation
36 affect Delta waterways and marinas. For instance, from 3 to 8 feet of silt can accumulate in a
37 given year at marina facilities along the Sacramento River. Sedimentation has led to the closure
38 of marinas and boating facilities in severely clogged channels. There are stringent regulations and
39 lengthy, complex permit requirements for dredging silt out of channels and marinas
40 (DPC 2006a, p. 58).

- 1 3. Waterway obstructions: Prior studies have repeatedly cited water obstructions as a significant
2 problem for boaters using Delta waters. The Franks Tract area has been identified as an especially
3 dangerous area for boating because it was once a levee-protected island and now, although
4 returned to open water, is shallow and obstructed by submerged levees and vegetation debris.
5 Snags, debris, and floating logs in waterways are very dangerous to boaters in other parts of the
6 Delta. (DPC 2006a, p. 63-64).
- 7 4. Invasive aquatic vegetation: Two non-native plants that have invaded the Delta are water
8 hyacinth and *Egeria densa*. Water hyacinths float on the surface and take root along shorelines.
9 *Egeria densa* is a subsurface water weed. By the 1980s, severe infestations of water hyacinth had
10 clogged navigation channels and marinas, creating problems for marina owners, safety hazards
11 for boaters, and issues for the native ecosystem. *Egeria densa* forms dense, submerged mats of
12 vegetation, which can accentuate the process of siltation, can be dangerous for swimmers, and
13 can create operational problems for boaters (DPC 2006a, pp. 62-63).
- 14 5. Water quality: Surveys of boaters utilizing the Delta have frequently shown water quality to be
15 the top or one of the top-mentioned concerns or issues. In a survey conducted as part of the
16 Sacramento-San Joaquin Delta Boating Needs Assessment, 74 percent of large boat owners and
17 79 percent of small boat owners identified water quality as an attribute of concern in the Delta.
18 Concerns associated with water quality included risks or perceived risks related to body contact,
19 possible sewage contamination, aquatic weeds, and water clarity (DBW 2002, pp. 4-23 to 4-24
20 and 4-29 to 4-30).
- 21 6. Boating destinations: Surveys of boaters also have found a high desire for more boat-in
22 destinations within the Delta. These requests tend to take three different forms (DBW 2002,
23 pp. 3-12 to 3-14):
 - 24 a. Major boat-in, mooring, and camping attractions, such as the Delta Meadows
 - 25 b. Numerous smaller day-use areas with restroom, picnic, and beach facilities
 - 26 c. Additional convenience docks adjacent to legacy communities, such as Walnut Grove
- 27 7. Highly sensitive habitat areas: Conflicts can occur between recreational boating and habitat
28 interests, depending on the boating activity, speed, motor, seasons, and frequency
29 (DPC 2006a, p. 64).
- 30 8. User group conflicts and law enforcement: The diversity of boating activities, from high-speed
31 wakeboarding and PWCs to fishing and non-motorized craft (e.g., canoe, kayak) results in
32 conflicts between some user groups. Another serious and common problem is trespass on private
33 property (DPC 2006a, pp. 65-66).

34 18.3.2.2.3 Wildlife-oriented Recreation

35 Wildlife-oriented recreation, including hunting, wildlife viewing, bird watching, and viewing natural
36 scenery (interpretive, walking, and driving trails), represents another category of recreation in the Delta.
37 There are more than 125,000 acres of public wildlife areas and numerous private hunting clubs within the
38 Delta. Ownership includes National Wildlife Refuges, State Wildlife Areas, private hunting clubs, and
39 private nonprofit wildlife preserves (Figure 18-4). Table 18-5 lists some of the wildlife areas in the Delta,
40 ownership, acres, and visitation numbers.

41 DFG owns and operates many wildlife areas and reserves within the Delta. Most of these areas are
42 unstaffed. Some are open to public access, while others are closed except for guided activities, special
43 events, or special permits. In general, visitation estimates are difficult to collect because there is rarely a
44 single gate or access point to these lands.

1 Figure 18-4

2 Wildlife-oriented Recreation in the Delta and Suisun Marsh

3 Sources: *AECOM 2011; California Chambers & Visitors Bureau 2010; DBWa 2011; California Federation of Certified Farmers'*
4 *Markets 2010; DFG 2011a; Central Valley Farmland Trust 2009; Clarksburg Wine Growers 2010; Discover the Delta Foundation*
5 *2010; DPC 2006b; Lodi Wine Country Trail Map 2010; Solano County 2011; Yacht Club Guide 2011; Yolo Land Trust 2007*

Table 18-5
Wildlife Areas in the Delta and Suisun Marsh

Name	Ownership	Acres^a	Annual Visitation	Types of Recreation
Acker Island	DFG	2	N/A	Public access not formally allowed; informal uses
Calhoun Cut Ecological Reserve	DFG	108	N/A	Land closed to public except waterway
Cosumnes River Preserve	The Nature Conservancy/DFG	1,301	N/A	Bird watching, photography, hiking, kayak/canoe
Decker Island Wildlife Area	DFG	3	N/A	Hunting, wildlife viewing
Hill Slough Wildlife Area	DFG	1,592	N/A	
Grizzly Island Wildlife Area	DFG	15,765	18,064 ^b	Fishing, hunting, wildlife viewing, hiking
Jepson Prairie Reserve	Solano Land Trust	1,556 ^c	N/A	Docent-led tours only
Lower Sherman Island	DFG	293	Approximately 5,000 ^d	Waterfowl hunting, fishing
Miner Slough Wildlife Area	DFG	37	N/A	Accessible by boat only, birdwatching, wildlife viewing, fishing, hunting
Point Edith Wildlife Area	DFG	727 ^e	N/A	
Rhode Island Wildlife Area	DFG	N/A	N/A	
Rush Ranch	Solano Land Trust	2,070 ^c	N/A	
Sherman Island	DWR	1,053	N/A	Special permit hunting only
Staten Island	The Nature Conservancy	9,200 ^f	N/A	Special permit hunting only
Stone Lakes National Wildlife Refuge	USFWS	17,640 ^g	Approximately 7,000 ^h	Waterfowl hunting, guided hikes, special events, bird watching, canoe/kayak tours
Twitchell Island	DWR	284		Special permit hunting only
White Slough Wildlife Area	DWR	62	Approximately 12,000 ^d	Hunting, fishing
Woodbridge Ecological Reserve	DFG	33	N/A	Organized bird watching tours only
Yolo Bypass Wildlife Area	DFG	1,572	Approximately 30,000 ⁱ	Hunting, fishing, wildlife viewing, education

^a The Dangermond Group 2011

^b Arrington 2011

^c Solano Land Trust 2011

^d VanKlombenburg 2011

^e DFG 2011b

^f The Nature Conservancy 2003

^g USFWS and U.S. Census Bureau 2006

^h Hopperstad 2011

ⁱ Burkholder 2011

N/A: not available

- 1 Yolo Bypass Wildlife Area provides access and limited facilities for hunting, fishing, wildlife viewing,
2 bird watching, and educational tours for children. DFG estimates visitation at the Yolo Bypass Wildlife
3 Area at 30,000 annually.
- 4 Lower Sherman Island primarily offers hunting and fishing access. There are approximately 20 wildfowl
5 hunting blinds maintained by a volunteer group on the site. DFG estimates visitation at approximately
6 2,000 hunters annually during hunting season and approximately 3,000 visits for fishing.
- 7 Calhoun and Acker Island are closed to public access, but informal recreation occurs onsite. A public
8 waterway transverses Calhoun, and Acker Island is adjacent to Lost Isle, a private resort.
- 9 The Stone Lakes National Wildlife Refuge is primarily closed to public access, but does have guided
10 tours and special events. Waterfowl hunting occurs from October to January on a reservation-only basis.
11 Tours include walking, bird watching, and canoe/kayak tours. The refuge is in the process of building and
12 developing the Blue Heron Trails public use area, which will include trails, parking, restrooms,
13 amphitheatre, interpretive kiosks, and a children's nature exploration area. The refuge anticipates public
14 use rising dramatically when this area opens in fall 2011 (USFWS 2011). Current visitation is estimated
15 at 6,000 to 7,000 annual visitors (Hopperstad 2011).
- 16 Cosumnes River Preserve is partially located within the Delta and includes lands owned by several
17 different organizations, including Bureau of Land Management, DFG, DWR, The Nature Conservancy,
18 Ducks Unlimited, Sacramento County, and the State Lands Commission. Bird watching, photography,
19 hiking, and paddling are encouraged on the preserve. Limited hunting is allowed in specially designated
20 areas. The preserve has a visitor center with picnic areas, interpretive displays, and restrooms, and
21 three designated hiking trails (Cosumnes River Preserve 2011).
- 22 Solano Land Trust owns Jepson Prairie and Rush Ranch Open Space. Jepson Prairie is open to the public
23 only for docent-led tours for wildlife viewing (Solano Land Trust 2011). Rush Ranch has historical
24 buildings, self-guided trails, educational programs, and docent-led tours.
- 25 Suisun Marsh provides numerous water-oriented recreational opportunities. The primary recreational
26 activity in the marsh is duck hunting, lasting from late October until January. Fishing is also a popular
27 year-round activity and accounts for almost as much recreational use as duck hunting. Other popular
28 year-round recreational activities include boating, kayaking, wildlife observation, and hiking. DFG's
29 Grizzly Island Wildlife Area provides 15,300 acres of recreational opportunities in the marsh
30 (Reclamation 2010).
- 31 Private hunting clubs exist throughout the Delta. Some of these clubs own land; others lease agricultural
32 land during waterfowl season. In its 1997 survey, DPC identified 23 private hunting clubs within the
33 Delta, most of which were in Yolo County (DPC 1997). In Suisun Marsh, the number of private hunting
34 clubs is significantly larger. Approximately 158 private clubs on more than 37,500 acres of land have
35 been identified (Reclamation 2010). In addition to the private clubs, the Grizzly Island Wildlife Area also
36 provides the general public with hunting opportunities (Reclamation 2010).
- 37 Trends in wildlife hunting and viewing are difficult to assess. The total number of hunting licenses issued
38 in California over the past 10 years has increased less than 10 percent (Table 18-6). Surveys conducted by
39 the USFWS in California show an increase in wildlife viewing/bird watching (USFWS and U.S. Census
40 Bureau 2006, p.14), while surveys conducted in 2002 and 2007 by State Parks shows a drop in
41 participation in both activities (State Parks 2009b, p. 33).

Table 18-6
Total Hunting Licenses Statewide by Year, 2000 – 2009

Year	Game Bird Hunting Licenses	Total Statewide Hunting Licenses
2000	945,611	1,564,806
2001	960,224	1,588,541
2002	903,670	1,536,387
2003	950,701	1,565,526
2004	974,580	1,596,861
2005	1,000,639	1,628,672
2006	1,025,345	1,659,349
2007	1,091,351	1,721,937
2008	1,041,031	1,674,004
2009	1,056,556	1,683,445

Source: DFG 2010

1 18.3.2.2.4 Delta-as-a-Place Recreation

2 The Delta has numerous attributes desired by non-boating visitors and, as a result, receives many visits
3 that are not directly water related (Figure 18-5). These attributes include winding roadways with scenic
4 vistas of waterways and farmland dotted with numerous grand historic homes. Many farmers direct sell
5 agriculture products including pears, vegetables, and Christmas trees. In recent years, several wineries
6 have been established within and on the edge of the Delta to take advantage of extensive plantings of
7 wine grapes. The small legacy communities that are found in the Delta have numerous historic structures,
8 food and beverage establishments, resident artisans, and overnight accommodations with venues for
9 special events. Land- and water-based tours are offered, and special events are held each year, including
10 the Courtland Pear Fair, Brentwood Corn Festival, Oakley Almond Festival, Tracy Bean Festival,
11 Stockton Asparagus Festival, Isleton Crawdad Festival, Rio Vista Bass Derby & Festival, and Delta Blues
12 Festival in Antioch. Public areas provide waterway viewing settings for picnicking and camping, and also
13 opportunities for wildlife viewing and historic site appreciation.

14 The combination of these attributes within a few hours' drive of more than 9 million urban residents has
15 created a unique regional recreational destination. Its value and visitation have likely increased
16 significantly over the years and are projected to continue to rise over time.

17 Small businesses have been formed around providing land-based and multi-day boat tours. "Farm Trails"
18 associations are being considered by the direct-sale farm operations along the Sacramento River and in
19 the Brentwood area.

20 18.3.2.2.5 Urban Edge Recreation

21 Recreational areas and facilities on the border between the Delta and urban development are indirectly
22 and directly related to the Delta (Figure 18-6). Indirectly, they are a buffer between the two areas. The
23 indirect facilities are generally not related to the resources of the Delta, but are located to provide
24 facilities for community residents and include ball fields, standard day use parks, golf courses, waterfront
25 and park-to-park trails, and venues for special events. Some planned developments may utilize
26 flood-prone areas of the Delta by proposing recreational areas on the edge of their projects.

27

1 Figure 18-5

2 Delta-as-a-Place Recreation Facilities

3 Sources: *California Chambers & Visitors Bureau 2010; California Federation of Certified Farmers' Markets 2010; Clarksburg*

4 *Wine Growers 2010; Discover the Delta Foundation 2010; DBW 2011; DFG 2011a; DPC 2006b; Lodi Wine Country Trail*

5 *Map 2010; Reclamation 2010; Solano County 2011; Yacht Club Guide 2011*

6

- 1 **Figure 18-6**
- 2 **Urban Edge Recreation In or Adjacent to the Delta and Suisun Marsh**
- 3 *Source: The Dangermond Group 2010*

1 The directly related recreational facilities along the edge of the Delta are campgrounds, marinas, and boat
2 launching facilities. Approximately 25 of the 95 marinas in the Delta are on the edge of urban or
3 urbanizing areas. There are approximately seven public parks and private camping resorts that contain
4 launching facilities within this zone. These facilities provide convenient access to the resources of the
5 Delta for residents of urban and suburban areas surrounding the Delta and are more specifically described
6 in the categories above (see Sections 18.3.2.2.1 – 18.3.2.2.4).

7 The public direct and indirect recreational areas include approximately 250 acres of parkland. In addition,
8 there are seven golf courses within these areas. Utilizing standard visitation numbers per acre of
9 developed urban parks, it is conservatively estimated that these areas accommodate 2 million visitor days
10 of use annually.

11 These recreational areas are almost exclusively publicly owned, serving their individual communities.
12 Facilities include six public marinas and eight public launching areas combined with day-use facilities,
13 golf courses, trails, picnic and day-use facilities, all of which are oriented toward the water. There are also
14 more standard park areas, where some facilities are oriented toward the water or open space and others
15 are combined. These combination facilities include ball fields, children's play areas, and an
16 outdoor amphitheater.

17 There are also private enterprise developments including restaurants, hotels, and office buildings taking
18 advantage of the water and park edge settings.

19 For example, the City of Stockton urban edge recreational facilities include the city's largest city park,
20 smaller neighborhood parks, three marinas, golf courses, and a downtown redevelopment area featuring
21 trails, amphitheatre, indoor sports arena/events space, marina, and companion private
22 enterprise development.

23 18.3.3 Delta Watershed

24 The Delta watershed and tributaries host extensive recreational resources in a vast area that includes most
25 of Northern California. Primarily concentrated near rivers, lakes, and reservoirs but including broad tracts
26 of mountain forests, foothills, valley floodplain, and urbanized areas, recreation occurs throughout the
27 planning area from the lowest rivers to the highest peaks. Virtually all types of outdoor recreation can be
28 found here, occurring on local, State, and federal lands and parks, as well as on private holdings. The
29 zone includes hundreds of improved parks, recreational areas, cultural sites, unimproved wilderness areas,
30 wildlife refuges, multi-use public lands, and large tracts of private lands. Growing urban areas in the
31 Central Valley lie within this planning area, and they provide basic recreational services through their
32 community parks and school grounds. Nearly all of these urbanizing areas within the Central Valley are
33 associated with rivers that flow into the Delta and with nearby reservoirs. Protection and enhancement of
34 the natural resources of these river systems is important to the fisheries, habitat, and water quality of the
35 Delta. Protection, enhancement, and access to these resources provide significant recreational benefits to
36 these urban areas.

37 Much of the recreation in the watershed area occurs on reservoirs and waterways managed as part of the
38 CVP and/or SWP. Some of the users of these valley reservoirs and rivers are users of the Delta as well.
39 The categories of available recreational activities are the same as within the Delta. These reservoirs and
40 rivers are desirable for boating and other recreation because of their facilities, water quality, and
41 proximity to population centers. The Delta is frequented for its boatable deep-water channels and
42 consistent water elevations in the summer and fall months. Recreation at the reservoirs frequently is
43 seasonally affected by water releases to meet downstream water demands, water quality management, and
44 reservoir design and operations criteria.

1 **18.3.3.1 Reservoirs and Lakes**

2 Most reservoirs and adjacent lands are publicly owned and offer a variety of recreational opportunities,
3 chiefly boating, waterskiing, PWC use, sailing, paddling, swimming, and fishing. Where conditions
4 permit, wind surfing and hunting may occur. Other landside recreational uses such as hiking, camping,
5 picnic/day use, bird-watching/nature viewing, and sightseeing are common. Also, where and when
6 conditions permit, whitewater use may occur above and below the reservoirs.

7 Most State and federal reservoir projects have extensive developed recreational facilities that often
8 include boat ramps and docks, marinas, campgrounds, picnic areas, trails, historic structures and cultural
9 features, parking, concession, and sanitation facilities.

10 Reservoirs of the SWP and CVP within the watershed zone that provide recreation include many areas
11 from the Sacramento (including the Trinity) and San Joaquin river watersheds. Recreation areas within
12 the Sacramento and Trinity watersheds include those listed in Table 18-7.

Table 18-7

Reservoirs of the SWP and CVP within the Sacramento and Trinity Watersheds

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Antelope Lake ^a	USFS/ Northwest Park Management (special use permit)	930	N/A	Three campgrounds with 194 campsites plus one group campground with four group campsites, one three-lane boat launch ramp, three day-use fishing access sites, a day-use picnic area, and a disabled fishing access area. RV camping available at all campsites
Lake Davis ^b	USFS/ Thousand Trails Management (special use permit)	4,000	N/A	Three campgrounds with 180 campsites, RV/trailer campsites available, trailer dump station, one two-lane boat launching ramp, two paved launch ramps, one boat top launching facility with paved loading/unloading area
Frenchman Lake ^c	USFS/ Thousand Trails Management (special use permit)	1,580	N/A	Five campgrounds with 199 campsites, including two group campsites, RV/trailer campsites available, two concrete boat ramp launches, and trailer dump station
Lake Oroville and Thermalito Diversion Pool, Forebay, and Afterbay ^d	DWR, State Parks	20,200	Close to 1 million visitors at the SRA, more than 85,000 visitors to the Lake Oroville Visitors Center	More than 1,700 campsites, 2 marinas, three boat launches, more than 50 miles of trails, DWR visitor center
Lake Shasta ^e	USFS	29,500	N/A	370 miles of shoreline, 1,200 campsites, 11 marinas, 21 boat launches, and 35 resorts with approximately 400 houseboat and cabin rentals

Table 18-7
Reservoirs of the SWP and CVP within the Sacramento and Trinity Watersheds

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Whiskeytown Lake ^f	National Park Service / Forever Resorts	3,200	N/A	Two RV campgrounds with 37 and 22 sites, one tent campground with 100 sites, two group campgrounds with 50 person max. per site, six primitive campgrounds with 18 sites total; three boat launches and two marinas
Trinity (Clair Engle) Lake ^g	USFS	17,000	N/A	23 developed campgrounds with 542 total sites, four boat-in only campgrounds with 34 total sites, two group campgrounds with 70 total sites, and eight boat ramps
Keswick Reservoir ^h	Reclamation	23,800	N/A	One boat ramp (operated by Bureau of Land Management)
Lake Red Bluff ⁱ	USFS	200 (seasonal)	N/A	One campground with 30 sites, one group campground with 100 max. capacity, one boat launch
Englebright Lake ^j	USACE	815	539,516 visits/year	Ten boat-in campground areas with 100 camp sites, two boat ramps, one marina with 92 slips
New Bullards Bar ^k	USFS	4,500	N/A	Four campgrounds with 98 campsites, one group campground with five campsites, one boat launch, one marina
Camp Far West ^l	Private	2,000	N/A	Two boat launch ramps, 137 campsites, eight RV hookups,
East Park and Stony Gorge Reservoirs ^m	Reclamation	1,280 (Stony Gorge)	N/A	One boat launch ramp, one group campground w/100 person max., campgrounds
Lake Berryessa ⁿ	Reclamation	20,700	N/A	Two large day-use areas, one launch ramp, seven resorts with camping day use and boating facilities (concession contracts currently in transition)
Folsom Lake and Lake Natoma ^o	State Parks	11,500	Approximately 1 million	75 miles of shoreline, boat launch areas at four locations around the lake, 700-slip marina, two campgrounds, multiple picnic areas, and more than 78 miles of paved and unpaved trails
Sugar Pine Reservoir ^p	Reclamation, USFS	165	N/A	Two campgrounds, one boat launch
Sly Park Reservoir ^q	El Dorado Irrigation District, Reclamation	650	N/A	159 campsites, five group use areas, two launch ramps

Table 18-7
Reservoirs of the SWP and CVP within the Sacramento and Trinity Watersheds

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
^a DWR 2011a, 2011b; The Dangermond Group 2011; USFS 2011a				
^b DWR 2011c; USFS 2011b				
^c DWR 2011d; USFS 2011c				
^d DWR 2010a; State Parks 2011a ; 2010, pp. 26-27				
^e Stienstra 2008, pp. 71-74; USFS 2011d				
^f NPS 2011				
^g USFS 2011e				
^h BLM 2011				
ⁱ NRRS 2011a; USFS 2011f				
^j USACE 2011a				
^k Emerald Cove Marina 2011; YCWA 2011				
^l Nevada County 2011				
^m NRRS 2011b				
ⁿ Reclamation 2011a				
^o State Parks 1978, 2010, pp. 20-21, 2011b				
^p NRRS 2011c; Reclamation 2011b				
^q EID 2011; NRRS 2011d				

- 1 Recreation areas within the San Joaquin River watershed that drain into the Delta include those listed in
2 Table 18-8.

Table 18-8
Reservoirs of the SWP and CVP within the San Joaquin Watershed

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Lake Camanche ^a	East Bay Municipal Utility District / California Parks Company	7,680	N/A	762 campsites, five group campsites, two RV parks, two marinas
New Hogan Lake ^b	USACE	4,400	N/A	Three campgrounds with 177 campsites, one group campground, 30 boat-in campsites, four public boat ramps
New Don Pedro Reservoir ^c	Don Pedro Recreation Agency	13,000	N/A	Three campgrounds with 139 campsites and one group campsite, two marinas
Lake McClure ^d	Merced Irrigation District	7,000+	N/A	Four recreation areas with 515 campsites, two marinas, 11 boat launch lanes, two houseboat mooring areas
Turlock Lake ^e	State Parks	3,558	More than 63,000	63 campsites, 50 picnic sites, swimming beach, boat launch, and 6 miles of trail
Millerton Lake ^f	State Parks	4,900	Approximately 340,000	43 miles of shoreline, multiple boat launch areas, campgrounds, and picnic areas and a full service marina
New Melones Reservoir ^g	Reclamation/ Pensus	12,500	N/A	Two recreation areas, five campgrounds with 305 campsites, two group campgrounds, three boat launch ramps, one marina

Table 18-8
Reservoirs of the SWP and CVP within the San Joaquin Watershed

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
------	--------------------------	------------------	----------------------	------------

^a Lake Camanche Recreation 2011

^b USACE 2011b

^c Don Pedro Recreation Agency 2011

^d Lake McClure Houseboat Owners Association 2011

^e State Parks 2010, p. 18-19, 2011c; Stienstra 2008, p. 317;

^f State Parks 2010, p. 18-19, 2011d; Stienstra 2008, p. 368;

^g NRRS 2011e

N/A: not available

1 18.3.3.2 Rivers

2 River recreation facilities within the Delta watershed vary by location, property ownership, and ease of
3 access. In the foothills and mountains, whitewater put-in and take-out locations often occur on an
4 “opportunity” basis along public rights-of-way at crossings and often lack improved facilities. Local and
5 State parks have been developed at many riverside locations and generally provide improved parking,
6 picnicking, boat launching, sanitation, and drinking water facilities, and sometimes camping and
7 developed trails. George Hatfield and McConnell SRAs on the Merced River and Caswell Memorial State
8 Park on the Stanislaus River are examples. Private marinas, launch ramps, and campgrounds also can be
9 found along rivers throughout the northern portion of the Delta. Many private fishing guides take
10 fishermen throughout the tributary system, utilizing river access facilities while providing equipment and
11 transportation to recreationists. Rivers at higher elevations with steeper profiles and often-uncontrolled
12 springtime runoff provide a wide range of whitewater recreation for individuals and commercial rafters
13 and kayakers.

14 State and federal wildlife agencies, in cooperation with non-profit conservation groups, are working to
15 protect prime natural stream and river resource values in the rural portions of the Central Valley.
16 Approximately 20 communities, sometimes in cooperation with these same entities, are working to
17 preserve natural river and stream-side values in various parts of the valley. The efforts in communities
18 normally include appropriate public access and recreational facilities, frequently including trails that lend
19 themselves to the linear nature of the waterways. Where possible, activities in the waterways include
20 rafting, kayaking, canoeing, tubing, swimming, recreational mining, and fishing.

21 In addition to these publicly owned, developed areas, there is extensive unmanaged use, primarily by low
22 income families, of both public and private river bank areas with no facilities. Swimming, wading,
23 fishing, and playing in the public waterways are a big part of these activities.

24 The Sacramento River is an important recreational resource with ample year-round flows, in contrast to
25 much of the San Joaquin River, which has been largely diverted for agricultural and domestic use. State
26 Parks Colusa-Sacramento River SRA lies along the river and provides campsites, picnic sites, fishing
27 access, and a launch ramp for small boats (State Parks 2011b). Visitation in 2008-2009 was 17,356
28 (State Parks 2010, p. 26-27). Many people canoe the lower Sacramento River from Redding 70 miles to
29 Woodson Bridge State Recreation Area and beyond (Stienstra 2008, pp. 152-153). Some river and
30 adjacent land area corridors have been designated as open space parkways, often expanding the value of
31 river corridors for recreation by expanding public access. The American River Parkway and San Joaquin
32 River Parkway are examples of this concept. They are exceptional, however, in that nearly all the other
33 river corridors, banks, and adjacent habitats are in private ownership. The American River Parkway
34 extends more than 25 miles from the confluence with the Sacramento River to recreation lands at Folsom

1 Lake SRA, which connects to Auburn SRA, effectively creating a public recreation corridor that extends
2 for some 50 miles.

3 Visitation for the American River Parkway in Sacramento County was estimated to be 5.5 million in 1985
4 (American River Parkway Funding Group and Sacramento County Regional Parks and Open Space
5 Department 2000, p.2). No visitation surveys or estimates have been made since that time. A conservative
6 estimate would be approximately 6 million current annual visitors.

7 **18.3.3.3 Wildlife Areas**

8 Popular seasonal recreational activities include waterfowl and pheasant hunting, wildlife viewing, bird
9 watching, and fishing. In the Central Valley, areas along river floodplains have been established as
10 wildlife refuges, such as Gray Lodge Wildlife Area. These areas provide wildlife viewing opportunities,
11 fishing, and hunting. Table 18-9 lists wildlife areas and refuges, their ownership, recreational use day
12 estimates, and types of recreation opportunities available.

Table 18-9
Wildlife Areas and Refuges in the Delta Watershed

Name	Ownership	Estimated Recreation Use Days	Types of Recreation
Gray Lodge Wildlife Area	DFG	199,000	Hunting, angling, bird watching, photography, hiking
Sacramento National Wildlife Refuge	USFWS	62,950	Hunting, visitor center, auto tour route, walking trail, environmental education
Delevan National Wildlife Refuge	USFWS	7,000	Hunting
Colusa National Wildlife Refuge	USFWS	38,800	Hunting, auto tour, walking trail
Sutter National Wildlife Refuge	USFWS	4,500	Hunting

Source: Reclamation 2001a, b, c

13 **18.3.3.4 Other State and Federal Lands**

14 Generally occupying higher elevations are extensive public lands operated by the U.S. Forest Service, the
15 National Park Service (NPS), the Bureau of Land Management (BLM), and to a lesser degree, State
16 Parks, DFG, and the Department of Forestry and Fire Protection. These vast areas support extensive
17 recreational activities that range from wilderness exploration to off-highway vehicle use, and nearly every
18 outdoor activity in between. Facility improvements similarly range from fully developed facilities in
19 many national and State parks to unimproved wilderness areas that preclude motorized equipment.

20 **18.3.3.5 City Parks and Schools**

21 Included in the existing recreation inventory in the watershed area are local, regional, and school park and
22 recreation facilities. Unlike many of the recreational features described above, these elements almost
23 exclusively serve local residents; however, many are located along edges of the resources. They include
24 county parks, park and recreation district holdings, city parks, and public school facilities. Some of these
25 parks are water-oriented and feature river access and the associated activities identified above. Most of
26 these park and schoolyards provide community sports and play elements that are not water oriented.

1 18.3.4 Areas Outside the Delta that Use Delta Water

2 Most resource-related recreation takes place in relationship to water features. Nearly all the water storage
3 facilities in California that receive water from the Delta include public recreation as a component of the
4 facility. Most of these are within or near the highly urbanized areas of the state and provide significant
5 recreational benefits to these areas.

6 Near-urban, resource-based parks include State and regional parks and recreation areas, protected natural
7 streams and rivers through urban areas, and water-related open space preserves. Data from a 1987
8 California Department of Parks and Recreation statewide survey of outdoor recreational use patterns
9 identified more than 200,000 acres of near-urban resource parks that had more than 200 million visitor
10 days of use per year (Dangermond 1993, p. 212–225).

11 The SWP contains ten bodies of water that receive water from the Delta (five in the Bay Area and the
12 Central Valley, and five in Southern California, as discussed below). Additional reservoirs in Northern
13 and Southern California are not part of the SWP, but receive some water from Delta facilities. Additional
14 recreation occurs at the wildlife areas and refuges that receive SWP water, and along the
15 California Aqueduct.

16 18.3.4.1 Northern California and Central Valley Reservoirs

17 There are six reservoirs and two additional small bodies of water in Northern California and the Central
18 Valley that receive water exported from the Delta. Five of those are part of the SWP⁵:

- 19 " Bethany Reservoir
- 20 " Lake Del Valle
- 21 " San Luis Reservoir
- 22 " O'Neill Forebay
- 23 " Los Banos Reservoir

24 Additional facilities include Los Vaqueros Reservoir north of Livermore, and Lake Evans and Lake
25 Webb, southwest of Bakersfield, along the California Aqueduct. Details on these reservoirs are included
26 in Table 18-10.

Table 18-10

Northern California and Central Valley Reservoirs that Receive Water Exported from the Delta by the SWP and CVP within the San Joaquin Watershed

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Bethany Reservoir ^a	DWR/ State Parks	166	More than 26,000	Eight picnic sites, 2 miles of trails, a connection to the California Aqueduct Bikeway, fishing access, and boat launch
Lake Del Valle ^b	DWR/ East Bay Regional Park District	750	Approximately 346,000 ^c	Day use picnic areas, a swimming beach, boat launching, and group camping

⁵ San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir are also jointly part of the CVP.

Table 18-10

Northern California and Central Valley Reservoirs that Receive Water Exported from the Delta by the SWP and CVP within the San Joaquin Watershed

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
San Luis Reservoir SRA (San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir) ^d	DWR/ State Parks	27,388	More than 285,000 visitors at SRA; more than 131,000 visitors at its Romero Visitors Center	Complex of three bodies of water, 193 campsites, 150 picnic areas, group camp sites, more than 13 miles of trails, fishing access, boat launch, and swimming beaches
Los Vaqueros Reservoir ^e	Contra Costa Water District/ East Bay Regional Park District	1,260	Approximately 50,000	Day-use facilities, picnic areas, fishing access, and boat rentals; 20,000 acres of protected lands with more than 55 miles of trails
Lake Evans and Lake Webb ^f	DWR/ Kern County	959	148,297 ^g	Boating, fishing, jet skiing, sailing, campgrounds, picnic area, bicycle trails, and concession facilities

^a State Parks 2010, p. 18-19

^b Stienstra 2008, p. 279

^c Schultz 2011

^d State Parks 2010, p. 18-19; DWR 2010a

^e CCWD 2011; Pike 2011

^f Kern County 2011

^g Ero 2011

1 **18.3.4.2 Southern California Reservoirs**

2 SWP facilities offer much water-oriented recreation south of the Tehachapis. Near Gorman, the aqueduct
3 re-emerges from its tunnel through the Tehachapi Mountains, and then splits. This western branch feeds
4 Quail Lake, Pyramid Lake, and the popular Castaic Lake SRA, all of which provide significant
5 water-oriented recreation to the greater Los Angeles regions. Periodically water from the western branch
6 flows into Lake Piru, which is upstream from Ventura. The eastern branch of the aqueduct continues and
7 is lifted into Silverwood Lake, creating Silverwood SRA. Downstream is the terminal SWP reservoir,
8 Lake Perris, home to Lake Perris SRA. Water from the eastern branch also flows into the Metropolitan
9 Water District's (Metropolitan's) Diamond Valley Lake and Lake Skinner, and eight reservoirs in
10 San Diego County, all of which also provide water-oriented recreational opportunities. Table 18-11
11 provides details on Southern California SWP reservoirs; Table 18-12 lists Southern California reservoirs
12 receiving SWP water.

Table 18-11
Southern California SWP Reservoirs

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Quail Lake ^a	DWR	290	N/A	Fishing, hiking, and bird watching; 3 miles of shoreline; features striped bass, channel catfish, tule perch, threadfin shad, and hitch; boats not allowed
Pyramid Lake ^b	DWR	1,360	Vista del Lago Visitors Center reported more than 144,000 visitors	20 miles of shoreline; power boating; jet skiing, fishing, windsurfing, and swimming; paved boat launch ramp, picnic areas, a convenience store, boat rentals, and a visitor center; campground nearby
Castaic Lake ^c	DWR/Los Angeles County	2,400	Averaged 924,000 in 2009 and 679,000 in 2010	29 miles of shoreline, bass fishing, boating, waterskiing, sailing, jet skiing; camping and picnicking
Silverwood Lake ^d	DWR/State Parks	1,000	More than 340,000	13 miles of shoreline; quota limits the number of boats on the lake and launch reservations are required on summer weekends and holidays; boating, fishing, marina with boat rentals, small store, campgrounds, picnic areas, and trails
Lake Perris ^e	DWR/State Parks	2,200	Approximately 650,000	Boating, swimming, fishing, water sports, campgrounds, picnic areas with beaches, miles of trails, including bicycle trails, area suitable for rock climbing; hunting is also permitted

^a DWR 2011e

^b DWR 2010a, 2011f

^c Bennett 2011; DWR 2011g; Stienstra 2008, pp. 462-463

^d DWR 2011b; State Parks 2010, p. 32-33, 2011e; Stienstra 2008, pp. 411-412

^e State Parks 2010, p. 22-23, 2011f; Stienstra 2008, pp. 418-419

N/A: not available

1

Table 18-12
Southern California Reservoirs Receiving SWP Water

Name	Ownership/ Management	Surface Acres	Annual Visitation	Facilities
Lake Piru ^a	United Water Conservation District	1,240	Approximately 150,000	Boat launching and a marina, day use, camping, and trails
Diamond Valley Lake ^b	Metropolitan	4,500	Approximately 135,000	Fishing and boating recreation, but no body contact or camping is allowed
Lake Skinner ^c	Metropolitan/Riverside County	1,200	173,000	Fishing, campgrounds, picnic/day use, a pool swim/water play area, events space, and trails; no body contact is allowed in the lake

^a Stienstra 2008, p. 410; Strahan 2011

^b Pike 2011; Stienstra 2008, pp. 424-425

^c Gayk 2011; Stienstra 2008, p. 421

1 Five of the 10 comparatively small reservoirs that are owned and operated by the City of San Diego
2 Water Authority (San Vicente, El Capitan, Lower Otay, and Miramar reservoirs and Murray Lake)
3 receive a blending of State and Colorado River water. All five reservoirs are close to or within urban
4 areas and provide public access and recreation. Recreational activities include fishing, non-body contact
5 boating, day use, and trail usage. Combined, the six reservoirs were estimated to attract approximately
6 1 million visitors days of use annually in 1992. No new significant facilities have been built since that
7 time, although there has been a population increase (Pasek 2011).

8 In addition to the reservoirs in the City of San Diego's water system that receive imported water, there are
9 three reservoirs operated by the cities of Escondido and Poway and the Helix Water District that receive
10 imported State water (Dixon, Jennings, and Poway reservoirs). All three provide for recreational use. The
11 total recreational visitation for these three reservoirs is estimated at 175,000 (estimated based on
12 Denham 2011).

13 Lake Hodges and San Dieguito Reservoir, which began taking imported State water in late 2010, also
14 provide recreation.

15 **18.3.4.3 Aqueducts and Rivers**

16 There are 16 designated fishing access sites, including 11 in the San Joaquin Valley, along the 444-mile
17 long California Aqueduct (DWR 2011h). Approximately 70 miles of bicycle trail extend from Bethany
18 Reservoir with plans to provide similar trails along the entire length of the aqueduct. In Kern County,
19 approximately 25 miles southwest of Bakersfield, the Buena Vista Aquatic Recreational Area was
20 developed along the aqueduct. This facility includes the 873-acre Lake Webb, which provides boating,
21 fishing, and jet skiing, and Lake Evans, 86 acres for low-speed boating, sailing, and fishing. Landside
22 improvements include campgrounds, picnic area, bicycle trails, and concession facilities
23 (Kern County 2011).

24 South of the Tehachapi Mountains, DWR operates five access points, including the Munz Ranch Road
25 site near Elizabeth Lake, the 70th Street West site near Quartz Hill, the Avenue S site near Palmdale, the
26 77th Street East Site near Little Rock Reservoir, and the Longview Road site near Pearblossom. Each
27 location provides parking, and some sites have restrooms.

28 Piru Creek, which connects Pyramid Reservoir and Lake Piru, receives supplemental flows from the SWP
29 that enhance fishing and trail access along portions of its distance.

30 **18.3.4.4 Wildlife Areas**

31 Popular seasonal recreational activities include waterfowl and pheasant hunting, wildlife viewing, bird
32 watching, and fishing. Table 18-13 lists wildlife areas and refuges, their ownership, recreational use day
33 estimates, and types of recreation opportunities available.

Table 18-13

Wildlife Areas and Refuges Outside the Delta Watershed that Receive CVP Water

Name	Ownership	Estimated Recreation Use Days	Types of Recreation
Volta Wildlife Area	DFG	13,000	Hunting, fishing, nature study
Grasslands Wildlife Area	DFG	N/A	(see Unit descriptions below)
Salt Slough Unit		Limited	Limited
China Island Unit		Limited	Limited

Table 18-13
Wildlife Areas and Refuges Outside the Delta Watershed that Receive CVP Water

Name	Ownership	Estimated Recreation Use Days	Types of Recreation
Mendota Wildlife Area	DFG	33,389	Hunting, fishing, camping, nature study
Grassland Resource Conservation District	Various	136,000	Hunting, wildlife viewing
San Luis National Wildlife Refuge	USFWS	N/A	(see Unit descriptions below)
San Luis Unit		43,000	Hunting, hiking, waterfowl and wildlife observation, auto tour, fishing
Kesterson Unit		4,800	Hunting, wildlife observation, hiking, biking
West Bear Creek Unit		1,328	Hunting, hiking, biking
Freitas Unit		1,600	Hunting
Merced Unit		13,100	Hunting, hiking, auto tour, wildlife viewing
East Bear Creek Unit		Limited	Limited
Kern National Wildlife Refuge	USFWS	6,300	Hunting, wildlife viewing
Pixley National Wildlife Refuge	USFWS	1,000	Hunting, wildlife viewing

Source: Reclamation 2001a, b, c

1 18.4 Impacts Analysis of Project and 2 Alternatives

3 18.4.1 Assessment Methods

4 The Delta Plan alternatives would not directly result in construction or operation of projects or facilities,
5 and therefore would result in no direct recreational impacts.

6 The Delta Plan alternatives could encourage the implementation of actions or activities by other agencies
7 to construct and operate facilities or infrastructure that are described in Sections 2A, Proposed Project and
8 Alternatives, and 2B, Introduction to Resource Sections. Examples of potential actions that could affect
9 recreation include land use changes, conversion of agricultural lands, or land fallowing. Projects may
10 include water and wastewater treatment plants; conveyance facilities, including pumping plants; surface
11 water or groundwater storage facilities; ecosystem restoration projects; flood control levees; or
12 recreational facilities. Implementation of these types of actions and construction and operation of these
13 types of facilities could result in recreational impacts at levels that could contribute to the impairment of
14 existing recreational activities and facilities, the substantial physical deterioration of the physical and
15 aesthetic settings for facilities and recreational activities, or further degrade recreational resources.

1 Recreational impacts from implementation of the alternatives were evaluated in terms of how project
2 components could cause impacts to recreation facilities and activities within the Delta, the Delta
3 watershed, and areas that use Delta water. Because project-level details on construction disturbance are
4 not available for the project components analyzed, potential recreational impacts were
5 evaluated qualitatively.

6 The precise magnitude and extent of project-specific recreation-related impacts would depend on the type
7 of action or project being proposed, its specific location, its total size, and a variety of project- and
8 site-specific factors that are undefined at the time of preparation of this program-level EIR.
9 Project-specific impacts would be addressed in project-specific environmental studies conducted by the
10 lead agency at the time the projects are proposed for approval.

11 This EIR proposes mitigation measures for recreation impacts. The ability of these measures to reduce
12 recreation impacts to less-than-significant levels depends on project-specific environmental studies;
13 enforceability of these measures depends on whether or not the project being proposed is a covered
14 action. This is discussed in more detail in Section 18.4.3.6 and in Section 2B, Introduction to Resource
15 Sections.

16 18.4.2 Thresholds of Significance

17 In accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines, an
18 impact related to recreation is considered significant if the proposed project would do any of
19 the following:

- 20 " Increase the use of existing neighborhood and regional parks or other recreational facilities such
21 that substantial physical deterioration of the facility would occur or be accelerated; or
- 22 " Include recreational facilities or require the construction or expansion of recreational facilities
23 which might have an adverse physical effect on the environment.

24 Additionally, a significant impact would occur if the Proposed Project would:

- 25 " Impair, degrade or eliminate recreational facilities and activities.

26 The following discussion of environmental impacts is limited to those potential impacts that could result
27 in some level of potentially significant environmental change, as defined by CEQA. As individual
28 projects are proposed, these individual projects will need to be evaluated in site-specific environmental
29 documents prepared by the lead agencies.

30 18.4.3 Proposed Project

31 18.4.3.1 *Reliable Water Supply*

32 As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
33 Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be
34 implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks
35 to improve water supply reliability by encouraging various actions that, if taken, could lead to completion,
36 construction, and/or operation of projects that could provide a more reliable water supply. Such projects
37 and their features could include the following:

- 38 " Surface water projects (water intakes, treatment and conveyance facilities, reservoirs,
39 hydroelectric facilities)
- 40 " Groundwater projects (wells, wellhead treatment, conveyance facilities)
- 41 " Ocean desalination projects (water intakes, brine outfalls, treatment and conveyance facilities)

- 1 " Recycled wastewater and stormwater projects (treatment and conveyance facilities)
- 2 " Water transfers
- 3 " Water use efficiency and conservation program implementation

4 The number and location of all potential projects that would be implemented is not known at this time.
5 However, the Proposed Project specifically names the DWR Surface Water Storage Investigation, which
6 includes the North-of-the-Delta Offstream Storage Investigation (aka Sites Reservoir), Los Vaqueros
7 Reservoir Project (Phase 2), and the Upper San Joaquin River Basin Storage Investigation Plan
8 (aka Temperance Flat Reservoir). It also encourages the update of Bulletin 118 that could lead to
9 improvements in groundwater management and development of related facilities. Bulletin 118 presents a
10 list of 10 recommendations for the management of groundwater but does not result in a specific project
11 the construction or operation of which could affect recreation; therefore, Bulletin 118 is not evaluated in
12 this section.

13 **18.4.3.1.1 Impact 18-1a: Impair, Degrade, or Eliminate Recreational Facilities and Activities**

14 The Proposed Project encourages projects that would include the construction and operation of facilities
15 that could be located in the Delta and Delta watershed and in areas outside the Delta that use Delta water,
16 as described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
17 Sections. Expansion of existing surface water storage projects could result in inundation of shoreline
18 trails, launching ramps, and use areas. These projects therefore could substantially impair, degrade, or
19 eliminate such recreational facilities.

20 Construction and operation of surface and ground water storage facilities, water intakes, and conveyance
21 facilities (canals, pipelines, tunnels, siphons, and pumping plants) could impact existing marinas and
22 boating activity areas, hunting and fishing areas, campgrounds, and various recreation related private
23 enterprise facilities, such as water oriented resorts, wineries, and businesses located within Delta Legacy
24 Communities. These impacts could include the elimination or degradation of recreational facilities or
25 areas where recreation is taking place. The activities also have the potential to degrade the setting and
26 character of lands surrounding the new facilities. Such projects also could displace recreational access and
27 structures, such as trails, docks, or tie-ups located along waterways. Those recreational facilities could be
28 lost permanently or relocated. Such relocation could require recreational users to travel longer distances
29 to these sites or could provide less or lower-quality recreation than the original facilities.

30 Changes in water flow patterns and elevations due to operation of water intakes and conveyance facilities
31 near boating and fishing areas, public and private recreational facilities, and waterways used for
32 recreation could adversely affect the recreational values of the area. For example, modified water flow
33 patterns and elevations could result in changes to fish and game bird species and populations that use an
34 area. These changes could adversely affect fishing, hunting, wildlife viewing, swimming, and boating
35 opportunities near the facilities locations. These changes also could change (either reduce or increase) the
36 amount of shoreline available for recreation.

37 Implementation of water use efficiency and water conservation measures under the Proposed Project
38 could result in landscape watering restrictions or changes to landscaping within both public and private
39 recreational areas. Landscaping changes from turf areas to drought-tolerant plantings may result in less
40 turf areas available or maintained for local recreational use, potentially substantially impairing local or
41 regional recreational facilities, including golf courses, day use areas, ball fields, and associated activities.

1 Under the Proposed Project, users located outside of the Delta that use Delta water could see decreases in
2 water flow from the Delta which could potentially result in less out-of-Delta water storage in local
3 reservoirs as compared to historical operations under existing conditions. Less storage at any of the
4 reservoirs could impact the recreational facilities and activities at reservoirs outside of the Delta⁶ by
5 either precluding or limiting lake access from existing facilities such as marinas, launch ramps, and
6 beaches; creating less desirable day use and camping areas due to increased distances from the lowered
7 water levels; and/or shortening the recreational season, due to earlier seasonal drawdowns and/or overall
8 lower lake levels. Changes may also impact flows along the California Aqueduct and the fishing that
9 occurs there.

10 It is unclear at this time how implementation of the Proposed Project would result in specific construction
11 activities, including the location, number, capacity, and methods and duration of construction activities.
12 However, the Delta Plan encourages at least to some degree implementation of the North of Delta
13 Offstream Storage Investigation, Los Vaqueros Reservoir Project (Phase 2), and the Upper San Joaquin
14 River Basin Storage Investigation Plan.

15 The Los Vaqueros Project has undergone project-specific environmental review via an EIS/EIR; the other
16 two projects have not. The Los Vaqueros EIS/EIR, however, provides analogous information about the
17 impacts expected from construction of the two other projects, which are similar to the Los Vaqueros
18 Project. In addition, the project-specific EIR for the Calaveras Dam Replacement Project (SFPUC 2011)
19 another surface storage project which is not named in the Delta Plan also provides analogous information.

20 The Los Vaqueros Reservoir Expansion EIS/EIR (Reclamation et al. 2009) evaluated three alternatives to
21 increase water storage, a new Delta intake structure, and conveyance facilities. In this case, recreational
22 resources are located within the footprint of the construction sites and would be impacted by construction
23 activities as well as by flooding due to the higher reservoir levels. The lead agency found that with
24 implementation of mitigation measures, including replacement of facilities, construction of the
25 Los Vaqueros Reservoir Expansion project would have a less-than-significant impact on
26 recreational facilities.

27 The San Francisco Public Utilities Commission (SFPUC) found in the EIR prepared for the project
28 (SFPUC 2011) that the Calaveras Dam Replacement project could temporarily impact recreational
29 resources, including trails, roads used by bicyclists, and wilderness areas due to construction activities.
30 However, impacts to recreation would be reduced to a less-than-significant level with the implementation
31 of mitigation measures, including application of air quality, traffic, and noise reduction after notification
32 to the neighborhood.

33 Although not named in the Delta Plan, the following projects are illustrative of the types of
34 construction-related impacts associated with water supply reliability projects: the Davis-Woodland Water
35 Supply Project (City of Davis 2007), which includes a water intake in the Sacramento River, pumping
36 plants, and conveyance and water treatment facilities;) and the Carlsbad Precise Development Plan and
37 Desalination Plant Project (City of Carlsbad 2005), which illustrates some of the likely recreation impacts
38 of constructing seawater desalination plants. The City of Davis found that construction and operation of
39 the intake could reduce access to, or interfere with the use of existing recreational opportunities or
40 facilities, but that impacts could be reduced to a less-than-significant level with the implementation of
41 mitigation measures such as installing waterway markers and buoys to protect boater safety, and
42 designing the intake facility to allow for continual public access to the Sacramento River during
43 construction and operation.

⁶ Reservoirs located outside the Delta that could potentially be affected include Bethany Reservoir, Lake Del Valle, San Luis Reservoir State Recreation Area, Los Vaqueros Reservoir, Lake Evans, and Lake Webb in Northern California and the Central Valley; and Quail Lake, Pyramid Lake, Castaic Lake, Silverwood Lake, Lake Perris, Lake Piru, Diamond Valley Lake, Lake Skinner, and several smaller San Diego County reservoirs in Southern California.

1 The Carlsbad Desalination Project is located on the Pacific Coast in the city of Carlsbad. It is the subject
2 of its own project-level EIR (2005) and subsequent addendum (2009) prepared by the City of Carlsbad
3 (City of Carlsbad 2005). Land uses surrounding the power plant area and planned desalination plant area
4 include residential and active and passive recreational uses such as swimming, surfing, walking, bird
5 watching, fishing, and aquaculture facility to the north. The project is proposing several additional
6 dedications that would allow for public access and recreation. Approval of the project could result in
7 potential improvements for recreation and public access along the shoreline and beach through easements
8 for use, leases, or land dedication subject to an agreement. Impacts to recreation are anticipated to be less
9 than significant.

10 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
11 time such projects are proposed by lead agencies. However, because named projects and projects
12 encouraged by the Delta Plan could impair, degrade, or eliminate recreational facilities and activities; this
13 potential impact is considered **significant**.

14 18.4.3.1.2 Impact 18-2a: Increase the Use of Existing Recreational Facilities Such That Substantial 15 Physical Deterioration of the Facility Would Occur or Be Accelerated

16 Water supply reliability projects which could result in the impairment, degradation, or elimination of
17 existing recreational facilities, as discussed above in Section 18.4.3.1.1, may cause recreational users to
18 be displaced to other facilities. This displacement may result in increased use at existing recreational
19 facilities, possibly leading to substantial physical deterioration of those facilities.

20 It is unclear at this time how implementation of the Proposed Project would result in construction and
21 operation activities, including the location, number, capacity, and methods and duration of activities.
22 However, the Delta Plan encourages at least to some degree implementation of the North of Delta
23 Offstream Storage Investigation, Los Vaqueros Reservoir Project, and the Upper San Joaquin River Basin
24 Storage Investigation Plan. The Los Vaqueros Project has undergone project-specific environmental
25 review via an EIS/EIR; the other two projects have not. Additional documents reviewed for examples of
26 potential impacts of water supply reliability projects other than surface water projects include the Draft
27 EIR for the Davis-Woodland Water Supply Project (City of Davis 2007), and the Huntington Beach
28 Seawater Desalination Project EIR (City of Huntington Beach, 2005). In all of these analyses, the lead
29 agencies found that the project alternatives would not increase the use of existing neighborhood and
30 regional parks or other recreational facilities such that substantial physical deterioration of the facility
31 would occur or be accelerated.

32 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
33 time such projects are proposed by lead agencies. However, because named projects and projects
34 encouraged by the Delta Plan could increase the use of existing recreational facilities; this potential
35 impact is considered **significant**.

36 18.4.3.1.3 Impact 18-3a: Require the Construction or Expansion of Recreational Facilities Which 37 Might Have an Adverse Physical Effect on the Environment

38 Water supply reliability projects that result in the impairment, degradation, or elimination of existing
39 recreational facilities (as described in Section 18.4.3.1.1) may cause the construction or expansion of
40 recreational facilities, which may have an adverse physical effect on the environment.

41 The Los Vaqueros Project has undergone project-specific environmental review via an EIS/EIR; the other
42 two projects have not. Additional documents reviewed for examples of potential impacts of water supply
43 reliability projects other than surface water projects include the Draft EIR for the Davis-Woodland Water
44 Supply Project (City of Davis 2007), and the Huntington Beach Seawater Desalination Project EIR
45 (City of Huntington Beach, 2005). Only the City of Davis Draft EIR analyzed whether the project would
46 include recreational facilities or require the construction or expansion of recreational facilities which

1 might have a significant adverse physical effect on the environment. The City of Davis found that
2 construction and operation of a water intake in the Sacramento River, pumping plants, and conveyance
3 and water treatment facilities would not require the construction or expansion of alternative recreation
4 facilities. It further found that mitigation measures of provision of continued service at the existing
5 recreation facility near the construction site and appropriate signage and river markers reduced other
6 recreational impacts to less than significant.

7 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
8 time such projects are proposed by lead agencies. However, because named projects and projects
9 encouraged by the Delta Plan could require the construction or expansion of recreational facilities,
10 leading to an adverse physical effect on the environment, this potential impact is considered **significant**.

11 **18.4.3.2 Delta Ecosystem Restoration**

12 As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
13 Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be
14 implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks
15 to improve the Delta ecosystem by encouraging various actions and projects that, if taken, could lead to
16 completion, construction, and/or operation of projects that could improve the Delta ecosystem.

17 Features of such actions and projects that could be implemented as part of efforts to restore the Delta
18 ecosystem include the following:

- 19 " Floodplain restoration
- 20 " Riparian restoration
- 21 " Tidal marsh restoration
- 22 " Ecosystem stressor management (e.g., continuation of ongoing programs managing pesticide
23 runoff, water quality, water flows)
- 24 " Invasive species management (including removal of invasive vegetation)

25 The number and location of all potential projects that could be implemented are not known at this time.
26 The following restoration areas, projects, and programs, however, are known to varying degrees and are
27 named in the Delta Plan:

- 28 " Cache Slough Complex (includes Prospect Island Restoration Project)
- 29 " Cosumnes River-Mokelumne River Confluence: North Delta Flood Control and Ecosystem
30 Restoration Project
- 31 " Lower San Joaquin River Bypass Proposal
- 32 " Suisun Marsh Habitat Management, Preservation, and Restoration Plan (includes Hill Slough
33 Restoration Project)
- 34 " Yolo Bypass
- 35 " Water Quality Control Plan Update for the San Francisco Bay/Sacramento–San Joaquin Delta
36 Estuary (water flow objectives update)
- 37 " Delta Conservancy Strategic Plan

- 1 " Variance of the U.S. Army Corps of Engineers' (USACE's) Vegetation Policy
2 " California Department of Fish and Game's (DFG's) Stage Two Actions for Nonnative Invasive
3 Species included in the Ecosystem Restoration Plan for the Sacramento-San Joaquin Bay Delta

4 Of these, only the North Delta Flood Control and Ecosystem Restoration Project (North Delta Flood
5 Control and Ecosystem Restoration Project EIR) (DWR 2010) and the Suisun Marsh project
6 (Suisun Marsh Habitat Management, Preservation, and Restoration Plan Draft EIS/EIR)
7 (Reclamation et al. 2010) have undergone project-specific environmental review.

8 The Proposed Project encourages the State Water Resources Control Board (SWRCB) to update the
9 Water Quality Control Plan Update for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and
10 develop, implement, and enforce updated flow requirements for the Delta and high-priority tributaries in
11 the Delta watershed that are necessary to achieve the coequal goals. As described in Section 2A, Proposed
12 Project and Alternatives, these actions would likely result in a more natural flow regime in the Delta and
13 Delta tributaries, and reduced export of water from the Delta. Water users in the areas outside the Delta
14 that use Delta water would likely respond to reduced supplies by constructing facilities to improve water
15 supply reliability and improve water quality. The impacts on recreation associated with these actions to
16 improve water supply reliability and water quality would be the same as those described above in Section
17 18.4.3.1 (Reliable Water Supply) and Section 18.4.3.3 (Water Quality Improvement) below.

18 The Delta Conservancy Strategic Plan is anticipated to provide a framework that would facilitate
19 ecosystem restoration in the Delta. The general impacts associated with the ecosystem restoration that
20 could result from that planning process are described below.

21 DFG's Stage Two Actions for Nonnative Invasive Species (DFG 2011c) identifies six actions for
22 preventing the establishment of additional nonnative invasive species and reduce their economic and
23 ecological impacts. These actions focus on monitoring, study, and coordination; the encouragement of the
24 continuation of these actions would not physically change existing conditions and would have no
25 recreational impacts.

26 **18.4.3.2.1 Impact 18-1b: Impair, Degrade, or Eliminate Recreational Facilities and Activities**

27 The Delta Plan encourages implementation of ecosystem restoration in the following areas of the Delta:
28 the Cache Slough Complex, Cosumnes River-Mokelumne River Confluence, lower San Joaquin River,
29 Suisun Marsh, and Yolo Bypass. However, it is not clear what specific restoration projects would be
30 constructed in these areas, or at what specific locations.

31 Implementation of these ecosystem restoration actions in the Delta probably would occur in rural areas
32 and along waterways under the Proposed Project, as described in Section 3. Construction of such
33 ecosystem restoration projects has the potential to temporarily degrade the setting and character of lands
34 and waterways near the restored areas. Degradation could be caused by elimination or relocation of
35 facilities or reduced access.

36 Restoration that involves removal or modification of Delta levees could adversely impact marinas and
37 other land-based facilities. Of the nearly 100 marinas in the Delta, most are located on levees or within
38 the floodway with some facilities (e.g., parking, picnic areas, and storage) located on the landside of the
39 levee. Modification of the levees and implementation of associated ecosystem restoration also could
40 adversely affect access to islands that are used for hunting and wildlife viewing opportunities. For
41 example, areas within floodplains that could become inundated for longer periods than under existing
42 conditions could reduce access to existing hunting and wildlife viewing areas, such as along the
43 Yolo Bypass.

1 Inundation of areas to provide tidal marsh, floodplain, and broader riparian habitat, as well as
2 management of invasive species, could lead to changes in fish and game species that use the restored area.
3 If areas with upland game species become inundated, hunting opportunities could be eliminated or
4 changed. If areas with freshwater ponds or streams become more saline due to expansion of adjacent tidal
5 marsh areas, changes in fish and game bird species would affect fishing, hunting, and wildlife viewing
6 opportunities for species that currently inhabit these areas under existing conditions. Management of
7 non-native species, such as bass, could result in degradation or elimination of recreational fishing
8 activities.

9 Inundation of areas to provide tidal marsh also could change the existing pattern of meandering, relatively
10 narrow, waterway channels to large fluctuating marsh areas. Opportunities for canoeing and kayaking
11 would be degraded or eliminated in these areas.

12 It is not known at this time exactly what types or where construction of specific restoration projects that
13 could have recreation impacts. However, the Delta Plan encourages and/or mentions implementation of
14 the nine projects listed in Section 18.4.3.2. There are ongoing projects that are similar to these restoration
15 projects, the environmental evaluation of which would be comparable to some of the actions/activities
16 that would be expected with the encouraged projects. These ongoing projects include the Suisun Marsh
17 Habitat Management, Preservation, and Restoration Plan (a project named in the Delta Plan) and the
18 North Delta Flood Control and Ecosystem Restoration Project.

19 The Suisun Marsh Management, Preservation, and Restoration Plan EIS/EIR (Reclamation 2010)
20 evaluated three alternatives to restore marsh habitat and create managed wetlands in Suisun Marsh.
21 Overall project goals included maintaining the heritage of water fowl hunting and other recreational
22 opportunities. The lead agency found that restoration activities could temporarily disrupt recreational
23 boating, and fishing. With mitigation measures including timing of construction and establishing warning
24 signs, impacts to recreation were anticipated to be less than significant.

25 The North Delta Flood Control and Ecosystem Restoration Project would modify existing levees, dredge
26 river channels, and restore habitat in the North Delta. In the EIR for the project (DWR 2010b), DWR
27 found that the project alternatives could temporarily disrupt recreational boating activities during
28 construction and result in the occasional temporary loss of wildlife viewing opportunities, but would have
29 no significant effects on recreation, and would be beneficial in the long term due to an increase in
30 recreational boating opportunities, upgrade of recreational facilities at Delta Meadows, and increased
31 public awareness of recreational facilities and public access points.

32 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
33 time such projects are proposed by lead agencies. However, because named projects and projects
34 encouraged by the Delta Plan could impair, degrade, or eliminate recreational facilities and activities, this
35 potential impact is considered **significant**.

36 18.4.3.2.2 Impact 18-2b: Increase the Use of Existing Recreational Facilities Such That Substantial 37 Physical Deterioration of the Facility Would Occur or Be Accelerated

38 Ecosystem restoration projects which could result in the impairment, degradation, or elimination of
39 existing recreational facilities, as discussed above in Section 18.4.3.2.1, may cause recreationists to be
40 displaced to other facilities. This displacement may result in increased use at existing recreational
41 facilities, possibly leading to substantial physical deterioration of those facilities.

42 It is not known at this time exactly what types or where construction of specific restoration projects that
43 could have recreational impacts would occur. However, the Delta Plan encourages and/or mentions
44 implementation of the nine projects listed in Section 18.4.3.2. There are ongoing projects that are similar
45 to these restoration projects, the environmental evaluation of which would be comparable to some of the
46 actions/activities that would be expected with the encouraged projects. These ongoing projects include the

1 Suisun Marsh Habitat Management, Preservation, and Restoration Plan (a project named in the
2 Delta Plan) and the North Delta Flood Control and Ecosystem Restoration Project.

3 In the Suisun Marsh Management, Preservation, and Restoration Plan EIS/EIR (Reclamation 2010), the
4 lead agency did not specifically analyze the potential for the project to increase the use of existing
5 recreational facilities. However, overall project goals included maintaining the heritage of water fowl
6 hunting and other recreational opportunities.

7 In the North Delta Flood Control and Ecosystem Restoration Project EIR (DWR 2010b), DWR also did
8 not specifically analyze the potential for the project to increase the use of existing recreational facilities,
9 but found that the restoration of marsh habitat and creation of managed wetlands would have beneficial
10 effects on recreation in the long term due to an increase in recreational boating opportunities, upgrade of
11 recreational facilities at Delta Meadows, and increased public awareness of recreational facilities and
12 public access points.

13 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
14 time such projects are proposed by lead agencies. However, because named projects and projects
15 encouraged by the Delta Plan could increase the use of existing recreational facilities, this potential
16 impact is considered **significant**.

17 18.4.3.2.3 Impact 18-3b: Require the Construction or Expansion of Recreational Facilities Which 18 Might Have an Adverse Physical Effect on the Environment

19 Ecosystem restoration projects which could result in the impairment, degradation, or elimination of
20 existing recreational facilities (Section 18.4.3.2.1) may cause the construction or expansion of recreational
21 facilities, which may have an adverse physical effect on the environment.

22 It is not known at this time exactly what types or where construction of specific restoration projects that
23 could have recreational impacts would occur. However, the Delta Plan encourages and/or mentions
24 implementation of the nine projects listed in Section 18.4.3.2. There are ongoing projects that are similar
25 to these restoration projects, the environmental evaluation of which would be comparable to some of the
26 actions/activities that would be expected with the encouraged projects. These ongoing projects include the
27 Suisun Marsh Habitat Management, Preservation, and Restoration Plan (a project named in the
28 Delta Plan) and the North Delta Flood Control and Ecosystem Restoration Project.

29 Neither lead agency for the Suisun Marsh Management, Preservation, and Restoration Plan EIS/EIR
30 (Reclamation 2010) nor the North Delta Flood Control and Ecosystem Restoration Project EIR
31 (DWR 2010b) specifically analyzed the potential for those projects to require the construction or
32 expansion of recreational facilities.

33 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
34 time such projects are proposed by lead agencies. However, because named projects and projects
35 encouraged by the Delta Plan could require the construction or expansion of recreational facilities,
36 leading to an adverse physical effect on the environment, this potential impact is considered **significant**.

37 18.4.3.3 Water Quality Improvement

38 As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
39 Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be
40 implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks
41 to improve water quality by encouraging various actions and projects, which if taken could lead to
42 completion, construction and/or operation of projects that could improve water quality.

43 Actions would include implementation of plans/programs that lead to reduced constituents from
44 agricultural runoff and wastewater treatment plants.

1 Associated projects could include construction and operation and maintenance of:

- 2 " Water treatment plants
- 3 " Conveyance facilities (pipelines and pumping plants)
- 4 " Wastewater treatment and recycle facilities
- 5 " Municipal stormwater treatment facilities
- 6 " Agricultural runoff treatment (eliminate, capture and treat/reuse)
- 7 " Wellhead treatment facilities
- 8 " Wells (withdrawal, recharge, and monitoring)

9 The number and location of all potential actions and projects that could be implemented is currently not
10 known. Various projects, however, are known to some degree and are named in the Delta Plan. These are:

- 11 " Central Valley Drinking Water Policy
- 12 " Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)
- 13 " Water Quality Control Plan Update for the San Francisco Bay/ Sacramento-San Joaquin Delta
- 14 Estuary (water flow objectives update)
- 15 " SWRCB/Central Valley Regional Water Quality Control Board Strategic Workplan
- 16 " Complete the following regulatory processes, research, and monitoring:
 - 17 . Central Valley Pesticide Total Maximum Daily Load and Basin Plan Amendment for
 - 18 diazinon and chlorpyrifos
 - 19 . Central Valley Pesticide Total Maximum Daily Load and Basin Plan Amendment
 - 20 for pyrethroids
 - 21 . Total Maximum Daily Load and Basin Plan Amendments for selenium and methylmercury
- 22 " North Bay Aqueduct Alternative Intake Project

23 18.4.3.3.1 Impact 18-1c: Impair, Degrade, or Eliminate Recreational Facilities and Activities

24 Water quality improvement projects encouraged by the Proposed Project would include new and
25 expanded water and wastewater treatment plants and associated conveyance facilities (canals, pipelines
26 tunnels, siphons and pumping plants). Construction of such facilities has the potential to degrade the
27 setting and character of lands surrounding the new facilities. Projects could displace and eliminate
28 recreational access and structures. Those recreational facilities could be lost permanently or relocated.
29 Such relocation could require recreational users to travel longer distances to these sites or could provide
30 less or lower-quality recreation than the original facilities.

31 The Delta Plan encourages implementation of the North Bay Aqueduct Alternative Intake Project and the
32 Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) effort. CV-SALTS
33 would result in the construction of new wastewater treatment facilities. The new North Bay Alternative
34 Intake Structure serves the purpose of meeting CV-SALTS and water discharge requirements. The new
35 alternative intake structure would be located on the Sacramento River in a rural area of Sacramento or
36 Yolo County and the new pipeline would extend from the new intake structure to the existing North Bay
37 Regional Water Treatment Plant. The diversion/intake structure and water conveyance pipeline are
38 similar to those associated with the Davis-Woodland Water Supply Project, which while not named in the
39 Delta Plan nevertheless provides analogous information.

1 The Davis-Woodland Water Supply Project EIR (City of Davis 2007) found that the construction of a
2 diversion/intake structure and water conveyance pipeline could reduce access to, or interfere with, the use
3 of existing recreational opportunities or facilities, including recreational use of the Sacramento River.
4 Mitigation measures include installing waterway markers and buoys to protect boater safety, and
5 designing the intake facility to allow for continual public access to the Sacramento River during
6 construction and operation. With these proposed mitigation measures, impacts were found to be less than
7 significant with mitigation.

8 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
9 time such projects are proposed by lead agencies. However, because named projects and projects
10 encouraged by the Delta Plan could impair, degrade, or eliminate recreational facilities and activities, this
11 potential impact is considered **significant**.

12 18.4.3.3.2 Impact 18-2c: Increase the Use of Existing Recreational Facilities Such That Substantial 13 Physical Deterioration of the Facility Would Occur or Be Accelerated

14 Water quality improvement projects which could result in the impairment, degradation, or elimination of
15 existing recreational facilities (Section 18.4.3.3.1) may cause recreational users to be displaced to other
16 facilities. This displacement may result in increased use at existing recreational facilities, possibly leading
17 to substantial physical deterioration of those facilities.

18 The Delta Plan encourages implementation of the North Bay Aqueduct Alternative Intake Project and the
19 Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) effort. The new
20 North Bay Alternative Intake Structure serves the purpose of meeting CV-SALTS and water discharge
21 requirements. The new alternative intake structure would be located on the Sacramento River in a rural
22 area of Sacramento or Yolo County and the new pipeline would extend from the new intake structure to
23 the existing North Bay Regional Water Treatment Plant. The diversion/intake structure and water
24 conveyance pipeline are similar to those associated with the Davis-Woodland Water Supply Project,
25 which while not named in the Delta Plan nevertheless provides analogous information. The
26 Davis-Woodland Water Supply Project EIR (City of Davis 2007) found that construction of a
27 diversion/intake structure and water conveyance pipeline would not increase the use of existing
28 neighborhood and regional parks or other recreational facilities such that substantial physical deterioration
29 of the facility would occur or be accelerated.

30 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
31 time such projects are proposed by lead agencies. However, because named projects and projects
32 encouraged by the Delta Plan could increase the use of existing recreational facilities, this potential
33 impact is considered **significant**.

34 18.4.3.3.3 Impact 18-3c: Require the Construction or Expansion of Recreational Facilities Which 35 Might Have an Adverse Physical Effect on the Environment

36 Water quality improvement projects which could result in the impairment, degradation, or elimination of
37 existing recreational facilities (Section 18.4.3.3.1) may cause the construction or expansion of recreational
38 facilities, which may have an adverse physical effect on the environment.

39 In the Davis-Woodland Water Supply Project EIR (City of Davis 2007) the City of Davis analyzed
40 whether the project would include recreational facilities or require the construction or expansion of
41 recreational facilities which might have a significant adverse physical effect on the environment. The City
42 found that the project alternatives would not require the construction or expansion of
43 recreational facilities.

1 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
2 time such projects are proposed by lead agencies. However, because named projects and projects
3 encouraged by the Delta Plan could require the construction or expansion of recreational facilities,
4 leading to an adverse physical effect on the environment, this potential impact is considered **significant**.

5 **18.4.3.4 Flood Risk Reduction**

6 As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
7 Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be
8 implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks
9 to reduce the risk of floods in the Delta by encouraging various actions that, if taken, could lead to
10 completion, construction, and/or operation of projects that could reduce flood risks in the Delta. Such
11 projects and their features could include the following:

- 12 " Setback levees
- 13 " Floodplain expansion
- 14 " Levee maintenance
- 15 " Levee modification
- 16 " Dredging
- 17 " Stockpiling of materials
- 18 " Subsidence reversal
- 19 " Reservoir reoperation

20 The number and location of all potential projects that would be implemented is not known at this time.
21 One possible project, however, is known to some degree and is named in the Delta Plan, specifically the
22 Sacramento Deep Water Ship Channel and Stockton Deep Water Ship Channel Dredging (the United
23 States Army Corps of Engineer's *Delta Dredged Sediment Long-Term Management Strategy* included in
24 Appendix C, Attachment C-7 of this EIR). No project specific environmental review has taken place for
25 the Sacramento Deep Water Ship Channel and Stockton Deep Water Ship Channel Dredging. A project
26 that involves similar hydraulic dredging and levee construction actions and that has undergone project-
27 specific environmental review is the North Delta Flood Control and Ecosystem Restoration Project. The
28 final EIR (DWR 2010b) for that project is used for reference. The Proposed Project also names DWR's *A*
29 *Framework for Department of Water Resources Investments in Delta Integrated Flood Management*,
30 which could, upon completion, provide guidance on the prioritization flood protection investments.

31 **18.4.3.4.1 Impact 18-1d: Impair, Degrade, or Eliminate Recreational Facilities and Activities**

32 Flood risk reduction projects encouraged by the Proposed Project would include the construction,
33 modification and maintenance of levees and operable barriers along the levees expansion of floodplains,
34 and sediment removal from channels. The facilities would be located primarily in the Delta.
35 Implementing the Proposed Project also could increase investments in levee improvements in the Delta.
36 The improvements would primarily be to existing levees and typically would not alter their basic shape
37 and configuration, except for the use of setback levees. Setback levees could extend the levee footprint
38 and width into the landside of an area and increase riparian habitat on the waterside of the levee.

39 Removal or modification of Delta levees, construction of setback levees, and expansion of floodplains
40 could adversely impact marinas and other land-based facilities. Of the nearly 100 marinas in the Delta,
41 most are located on levees or within the floodway with some facilities (e.g., parking and storage) located
42 on the landside of the levee. Almost half of the marinas are clustered in the West Delta and removal of
43 levees surrounding islands could adversely impact these marinas directly, as well as adversely impact the
44 recreational activities enjoyed by boaters departing from these marinas.

1 Modification of the levees could adversely affect access to islands that are used for hunting and wildlife
2 viewing opportunities. For example, areas within floodplains that could become inundated for longer
3 periods than under existing conditions could reduce access to existing hunting and wildlife viewing areas,
4 such as along the Yolo Bypass.

5 Dredging activities have the potential to impact recreational facilities and activities in the dredging area,
6 either during dredging activities, or after dredging is complete, due to impacts on water flow, quality, or
7 fisheries in the waterways. These may impact boating, fishing, or swimming in the vicinity of the
8 dredging activities.

9 It is not known at this time what types or where construction of specific flood risk reduction projects that
10 could affect recreation would occur. However, in addition to levee construction and levee repairs, the
11 Delta Plan encourages implementation of dredging to reduce flood risk, including such as would be
12 involved in the Sacramento Deep Water Ship Channel and Stockton Deep Water Ship Channel Dredging
13 Project, which has not undergone project-specific environmental review. A project that involves similar
14 hydraulic dredging, and levee construction actions, is the North Delta Flood Control and Ecosystem
15 Restoration Project; it has undergone project-specific environmental review (DWR 2010b).

16 The North Delta Flood Control and Ecosystem Restoration Project is discussed in the ecosystem
17 restoration subsection (Section 18.4.3.2). DWR found that the dredging and levee construction could
18 temporarily disrupt recreational boating activities during construction and result in the occasional
19 temporary loss of wildlife viewing opportunities, but would have no significant impacts on recreation,
20 and would be beneficial in the long term due to an increase in recreational boating opportunities, upgrade
21 of recreational facilities at Delta Meadows, and increased public awareness of recreational facilities and
22 public access points.

23 The USACE Draft Supplemental EIS/EIR for the Sacramento River Deep Water Ship Channel
24 (USACE 2011c) was reviewed to provide perspective on the significance of these types of recreational
25 impacts and the likelihood that they can be mitigated. The lead agencies found that dredging operations
26 and dredged material placement activities could result in temporary impacts to boating and fishing due to
27 the positioning of construction equipment, swimming due to increases in turbidity, and recreational use of
28 shoreline areas due to the placement of dredge/slurry pipe. Those impacts were less than significant. The
29 lead agencies found no recreation impacts to be significant, but mitigation measures such as, observing
30 U.S. Coast Guard (USGS) practices for navigation safety and communications and establishing a
31 construction exclusion zone around the dredging operations, further reduced the temporary impacts.

32 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
33 time such projects are proposed by lead agencies. However, because named projects and projects
34 encouraged by the Delta Plan could impair, degrade, or eliminate recreational facilities and activities; this
35 potential impact is considered **significant**.

36 18.4.3.4.2 Impact 18-2d: Increase the Use of Existing Recreational Facilities Such That Substantial 37 Physical Deterioration of the Facility Would Occur or Be Accelerated

38 Flood control projects which could result in the impairment, degradation, or elimination of existing
39 recreational facilities (Section 18.4.3.4.1) may cause recreational users to be displaced to other facilities.
40 This displacement may result in increased use at existing recreational facilities, possibly leading to
41 substantial physical deterioration of those facilities.

42 While the specific impacts of these projects, if they go forward, are yet to be determined, projects with
43 characteristics similar to those described above for reducing flood risk provide perspective on the
44 significance of these types of recreational impacts and the likelihood that they can be mitigated. For
45 example, the North Delta Flood Control and Ecosystem Restoration Project Final EIR (DWR 2010b)
46 found that dredging and levee construction would have no significant impacts on recreation and would be

1 beneficial in the long term due to an increase in recreational boating opportunities, upgrade of recreational
2 facilities at Delta Meadows, and increased public awareness of recreational facilities and public access
3 points. The Draft Supplemental EIS/EIR for the Sacramento River Deep Water Ship Channel
4 (USACE 2011c) found that dredging operations and dredged material placement activities could result in
5 temporary impacts to boating and fishing due to the positioning of construction equipment, swimming
6 due to increases in turbidity, and recreational use of shoreline areas due to the placement of dredge/slurry
7 pipe. Those impacts were less than significant. The lead agencies found no recreation impacts to be
8 significant, but mitigation measures such as observing U. S. Coast Guard (USGS) practices for navigation
9 safety and communications and establishing a construction exclusion zone around the dredging
10 operations, further reduced the temporary impacts on recreation.

11 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
12 time such projects are proposed by lead agencies. However, because named projects and projects
13 encouraged by the Delta Plan could increase the use of existing recreational facilities; this potential
14 impact is considered **significant**.

15 18.4.3.4.3 Impact 18-3d: Require the Construction or Expansion of Recreational Facilities Which 16 Might Have an Adverse Physical Effect on the Environment

17 Flood control projects which could result in the impairment, degradation, or elimination of existing
18 recreational facilities (Section 18.4.3.4.4.1) may cause the construction or expansion of recreational
19 facilities, which may have an adverse physical effect on the environment.

20 While the specific impacts of these projects, if they go forward, are yet to be determined, projects with
21 characteristics similar to those described above for reducing flood risk provide perspective on the
22 significance of these types of recreational impacts and the likelihood that they can be mitigated. For
23 example, the North Delta Flood Control and Ecosystem Restoration Project Final EIR (DWR 2010b)
24 found that dredging and levee construction would have no significant impacts on recreation and would be
25 beneficial in the long term due to an increase in recreational boating opportunities, upgrade of recreational
26 facilities at Delta Meadows, and increased public awareness of recreational facilities and public access
27 points. The Draft Supplemental EIS/EIR for the Sacramento River Deep Water Ship Channel
28 (USACE 2011c) found that dredging operations and dredged material placement activities could result in
29 temporary impacts to boating and fishing due to the positioning of construction equipment, swimming
30 due to increases in turbidity, and recreational use of shoreline areas due to the placement of dredge/slurry
31 pipe. Those impacts were less than significant. The lead agencies found no recreation impacts to be
32 significant, but mitigation measures such as observing U. S. Coast Guard (USGS) practices for navigation
33 safety and communications and establishing a construction exclusion zone around the dredging
34 operations, further reduced the temporary recreation impacts.

35 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
36 time such projects are proposed by lead agencies. However, because named projects and projects
37 encouraged by the Delta Plan could require the construction or expansion of recreational facilities,
38 leading to an adverse physical effect on the environment, this potential impact is considered **significant**.

39 18.4.3.5 Protection and Enhancement of Delta as an Evolving Place

40 As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource
41 Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be
42 implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks
43 to protect and enhance the Delta as an evolving place by encouraging various actions

1 and projects that, if taken, could lead to completion, construction, and/or operation of associated projects.
2 Features of such actions could include the following:

3 " Gateways, bike lanes, parks, trails, and marinas and facilities to support wildlife viewing, angling,
4 and hunting opportunities

5 " Additional retail and restaurants in legacy towns to support tourism

6 The number and location of all potential projects that could be implemented is not currently known.
7 However, three possible projects are known to some degree and are named in the Delta Plan, which are
8 new State parks at Barker Slough, Elkhorn Basin, and in the southern Delta.

9 18.4.3.5.1 Impact 18-1e: Impair, Degrade, or Eliminate Recreational Facilities and Activities

10 Delta enhancement projects encouraged by the Proposed Project would include the construction of
11 recreational trails, community gateways and visitor centers, new parks and waterfowl hunting
12 opportunities, identity "branding" (signage and other improvements along major roadways that are
13 gateways to the Delta), historic preservation, and related projects. These facilities would be located
14 primarily in the Delta.

15 Construction of recreational trails, community gateways and visitor centers, and new parks and facilities
16 will occur in areas where the agency considering their construction determines that recreation would be
17 beneficial. While such projects could displace and eliminate existing recreational access and structures,
18 those recreational opportunities are likely to be of lesser quality than the new recreation opportunities.
19 It is not expected that the construction of recreation trails, community gateways and visitor centers, and
20 new parks and facilities would impair, degrade, or eliminate recreational facilities and activities.

21 It is not known at this time what types or where construction of specific Delta as evolving place type
22 projects that could affect recreation would occur. However, the Delta Plan encourages implementation of
23 the Barker Slough and Elkhorn Basin State parks and a new park somewhere in the southern Delta, none
24 of which have undergone project-specific environmental review. There are ongoing projects that are
25 similar to these park projects and that would be comparable to the general types of Delta-enhancing
26 projects listed above. One ongoing project that has undergone project-specific environmental review is
27 the Bidwell-Sacramento River State Park Habitat Restoration and Outdoor Recreation Facilities
28 Development Project. In the EIR for the Bidwell-Sacramento River State Park Habitat Restoration and
29 Outdoor Recreation Facilities Development Project (State Parks 2008), recreational impacts associated
30 with these facilities were determined to be either less than significant or less than significant with
31 mitigation, and generally beneficial.

32 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
33 time such projects are proposed by lead agencies. However, there is no substantial evidence that this
34 impact would be significant. This conclusion is based on the review of environmental analysis of similar
35 projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably
36 plausible scenario in which a potential significant impact would occur. It is therefore concluded that this
37 impact would likely be **less than significant** and generally beneficial. Future project-specific analyses
38 may develop adequate information to arrive a different conclusion; however for purposes of this
39 program-level analysis, there is no available information to indicate that another finding is warranted or
40 supported by substantial evidence.

41 18.4.3.5.2 Impact 18-2e: Increase the Use of Existing Recreational Facilities Such That Substantial 42 Physical Deterioration of the Facility Would Occur or Be Accelerated

43 Delta enhancement projects encouraged by the Proposed Project would include the construction of
44 recreational trails, community gateways and visitor centers, new parks and waterfowl hunting

1 opportunities, identity “branding” (signage and other improvements along major roadways that are
2 gateways to the Delta), historic preservation, and related projects.

3 The construction of these Delta enhancement projects is not anticipated to increase the use of existing
4 recreational facilities because they would provide new and differing opportunities for recreation to the
5 public. For example, a person could choose to go to a new park or recreation trail, as opposed to an
6 existing park or trail. However, the construction of Delta enhancement projects encouraged by the Delta
7 Plan could result in more recreation generally occurring in the Delta, and therefore more use of existing
8 facilities. For example, creating better signage and visibility of the Delta could increase recreation at
9 existing facilities. Also, a person could come to the Delta for a new waterfowl hunting facility and, while
10 in the Delta, use an existing recreation trail. In this manner, use of existing recreation facilities could
11 increase and cause the physical deterioration of those facilities.

12 While the specific impacts of the named projects, if they go forward, are yet to be determined, projects
13 with characteristics similar to those described above for State parks’ habitat restoration and development
14 projects provide perspective on the significance of these types of recreational impacts and the likelihood
15 that they can be mitigated. For example, the EIR for the Bidwell–Sacramento River State Park Habitat
16 Restoration and Outdoor Recreation Facilities Development Project (State Parks 2008) is illustrative of
17 some of the types of recreational impacts associated with habitat restoration and outdoor recreational
18 development projects. The recreational impacts associated with these facilities were determined to be
19 either less than significant or less than significant with mitigation, and generally beneficial.

20 Project-level impacts would be addressed in future site-specific environmental analysis conducted at the
21 time such projects are proposed by lead agencies. However, because named projects and projects
22 encouraged by the Delta Plan could increase the use of existing recreational facilities, this potential
23 impact is considered **significant**.

24 18.4.3.5.3 Impact 18-3e: Require the Construction or Expansion of Recreational Facilities Which 25 Might Have an Adverse Physical Effect on the Environment

26 The construction of Delta enhancement projects includes the construction of recreation facilities and
27 opportunities that could have an adverse physical effect on the environment. The potential environmental
28 impacts of the Delta enhancement projects encouraged by the Delta Plan are discussed by resource in
29 other parts of this EIR.

30 *18.4.3.6 Mitigation Measures*

31 Any covered action that would have one or more of the significant environmental impacts listed above
32 shall incorporate the following features and/or requirements related to such impacts.

33 With regard to covered actions implemented under the Delta Plan, these mitigation measures will reduce
34 the impacts of the Proposed Project. Project-level analysis by the agency proposing the covered action
35 will determine whether the measures are sufficient to reduce those impacts to a less-than-significant level.
36 Generally speaking, many of these measures are commonly employed to minimize the severity of an
37 impact and in many cases would reduce impacts to a less-than-significant level, as discussed below in
38 more detail.

39 With regard to actions taken by other agencies on the basis of Delta Plan recommendations (i.e., activities
40 that are not covered actions), the implementation and enforcement of these measures would be within the
41 responsibility and jurisdiction of public agencies other than the Delta Stewardship Council. Those
42 agencies can and should adopt these measures as part of their approval of such actions, but the Delta
43 Stewardship Council does not have the authority to require their adoption. Therefore, significant impacts
44 of noncovered actions could remain **significant and unavoidable**.

1 How mitigation measures in this EIR relate to covered and noncovered actions is discussed in more detail
2 in Section 2B, Introduction to Resource Sections.

3 18.4.3.6.1 Mitigation Measure 18-1

4 The following mitigation measures would reduce the effects of Impacts 18-1a through 18-1e, Impair,
5 Degrade, or Eliminate Recreational Facilities and Activities:

6 " If the substantial impairment, degradation, or elimination of recreational facilities occurs,
7 replacement facilities of equal capacity and quality with ongoing funding for maintenance of
8 these facilities shall be provided.

9 " New water supply, ecosystem restoration, and water quality facilities shall be located away from
10 existing recreational sites, including historical towns, areas with developed areas to access or
11 view recreational opportunities, and areas with high levels of recreational use, including public
12 and private facilities, State and local parks, State and federal wildlife areas, marinas, and hunting
13 clubs. If significant impacts cannot be avoided, existing facilities shall be relocated within the
14 local area and ongoing funding for maintenance of these facilities shall be provided.

15 " If degradation or impairment of recreational facilities, settings, and activities occur from
16 implementation of water use efficient practices and water conservation measures at recreational
17 areas, the park and recreation areas shall be redeveloped with drought-tolerant plant materials,
18 water efficient irrigation systems, and synthetic turf substitutes where appropriate, in such a way
19 as to retain recreational facilities and use areas.

20 " If the volume of water exported from the Delta declines over multiple years, the lead agencies
21 that implement local water supplies probably would not be able to develop a long-term
22 replacement water supply for the surface water reservoirs. However, if feasible, reservoir storage
23 operations criteria must be modified to increase the minimum amount of emergency stand-by
24 storage water that remains in the reservoir to also provide water-based recreation. Also, if
25 feasible, water allocations to water users must be modified to provide more surface water in the
26 reservoirs for recreation and provide other water supplies for non-recreation water users. Access
27 facilities must be modified to accommodate lower water elevations or more frequent fluctuations
28 in water elevations that could occur more frequently in the Proposed Project than under
29 existing conditions.

30 " Ecosystem restoration areas shall be located away from high-use recreational sites, if feasible.
31 Design of the restoration areas shall consider methods to maintain access to adjacent areas or
32 recreational areas that would be periodically inundated under restoration. Design of levee
33 modifications to provide for inundation of restored areas also shall consider the possibility of
34 using levee remnants to maintain meander channels that would facilitate recreational
35 opportunities. If significant impacts to marinas, hunting clubs, and other recreational facilities
36 cannot be avoided, the lead agency shall consider relocation of these facilities, if feasible.

37 These mitigation measures are commonly employed on a variety of construction projects. In many cases,
38 they reduce significant recreational impacts to less-than-significant levels. Implementation of these
39 measures would reduce recreational impacts by locating new water supply, ecosystem, and water quality
40 facilities away from existing recreational sites, and by modifying, redeveloping, or replacing existing
41 recreational facilities. In some cases, it will not be feasible to locate new water supply, ecosystem
42 restoration, or water quality facilities away from existing recreational sites. Moreover, as discussed above,
43 with regard to actions taken by other agencies on the basis of Delta Plan recommendations (i.e. activities
44 that are not covered actions), the implementation and enforcement of these measures would be within the
45 responsibility and jurisdiction of public agencies other than the Delta Stewardship Council. For these
46 reasons, impacts on existing recreation facilities would remain **significant**.

1 18.4.3.6.2 Mitigation Measure 18-2

2 The following mitigation measures would reduce the effects of Impacts 18-2a through e, Increase the Use
3 of Existing Recreational Facilities Such That Substantial Physical Deterioration of the Facility Would
4 Occur or Be Accelerated:

5 " If substantial temporary or permanent impairment, degradation, or elimination of recreational
6 facilities causes users to be directed towards other existing facilities, lead agencies shall
7 coordinate with impacted public and private recreation providers to direct displaced users to
8 under-utilized recreational facilities.

9 " Lead agencies shall provide additional operations and maintenance of existing facilities in order
10 to prevent deterioration of these facilities.

11 " If possible, lead agencies shall provide temporary replacement facilities.

12 " If the increase in use is temporary, once use is decreased back to existing conditions, degraded
13 facilities shall be rehabilitated or restored.

14 " Where impacts to existing facilities are unavoidable, compensate for impacts through mitigation,
15 restoration, or preservation off-site or creation of additional permanent new
16 replacement facilities.

17 These mitigation measures are commonly employed on a variety of construction projects. In many cases,
18 they reduce significant recreational impacts to less-than-significant levels. Implementation of these
19 measures would reduce recreational impacts by directing displaced users to under-utilized recreational
20 facilities, providing additional operations and maintenance of existing recreational facilities, providing
21 temporary replacement facilities, and, if necessary, restoring, rehabilitating, or replacing existing
22 recreational facilities. In some cases, it will not be feasible to direct displaced users to under-utilized
23 facilities or to provide temporary replacement facilities. Moreover, as discussed above, with regard to
24 actions taken by other agencies on the basis of Delta Plan recommendations (i.e. activities that are not
25 covered actions), the implementation and enforcement of these measures would be within the
26 responsibility and jurisdiction of public agencies other than the Delta Stewardship Council. For these
27 reasons, impacts on existing recreational facilities would remain **significant**.

28 18.4.3.6.3 Mitigation Measure 18-3

29 The following mitigation measures would reduce the effects of Impacts 18-3a through e, Require the
30 Construction or Expansion of Recreational Facilities Which Might Have an Adverse Physical Effect on
31 the Environment:

32 " Projects shall be sited in areas that would have minimal adverse physical effect on
33 the environment.

34 " Where impacts to the environment are unavoidable, compensate for impacts through mitigation,
35 restoration, or preservation off-site or creation of additional permanent new
36 replacement facilities.

37 These mitigation measures are commonly employed on a variety of construction projects. In many cases,
38 they reduce significant recreational impacts to less-than-significant levels. Implementation of these
39 measures would reduce recreational impacts by locating projects in such a manner as to minimize adverse
40 physical effects on the environment, and by compensating for unavoidable impacts through mitigation,
41 restoration, or preservation off-site or creation of additional facilities. In some cases, it will not be feasible
42 to avoid adverse physical effects on the environment. Moreover, as discussed above, with regard to
43 actions taken by other agencies on the basis of Delta Plan recommendations (i.e. activities that are not
44 covered actions), the implementation and enforcement of these measures would be within the

1 responsibility and jurisdiction of public agencies other than the Delta Stewardship Council. For these
2 reasons, impacts on recreational facilities would remain **significant**.

3 18.4.4 No Project Alternative

4 As described in Section 2A, Proposed Project and Alternatives, the No Project Alternative is based on the
5 continuation of existing plans and policies and the continued operation of existing facilities into the future
6 and permitted and funded projects. Seven ongoing projects have been identified as part of the No Project
7 Alternative. The list of projects included in the No Project Alternative is presented in Table 2-2.

8 The No Project Alternative includes various water supply projects and one ecosystem enhancement
9 project, as described in Section 2A, Proposed Project and Alternatives. These generally would have the
10 same types of impacts on recreation as would occur under the Proposed Project. However, the Delta Plan
11 would not be in place to encourage various other projects to move forward. To the extent the absence of
12 the Delta Plan results in those projects not happening, there would be no recreational impacts associated
13 with them.

14 Compared to the Proposed Project, the No Project Alternative would result in fewer actions and projects
15 to improve water supply reliability, restore the Delta ecosystem, improve water quality, reduce flood risk,
16 and protect and enhance the Delta as an evolving place. Overall, the reduced number of projects and
17 actions under the No Project Alternative would reduce the potential impacts on recreation resulting from
18 construction and operation of those projects. In addition to a general reduction in the number of projects
19 with relatively small construction footprints, the large-scale surface water storage facilities and increased
20 levee modification and maintenance encouraged under the Proposed Project would not move forward
21 under the No Project Alternative, and the impacts associated with these projects would not occur.
22 Similarly, fewer ecosystem restoration projects would proceed under the No Project Alternative, resulting
23 in fewer construction impacts. However, the benefits to recreational resources associated with the benefits
24 to biological resources resulting from ecosystem restoration and projects that support habitat development
25 (e.g., setback levees and floodplain expansion) would not be realized under the No Project Alternative.

26 Overall, the adverse impacts on recreational resources resulting from the No Project Alternative would be
27 **less than** those under the Proposed Project.

28 18.4.5 Alternative 1A

29 Under Alternative 1A, the construction and operation of surface water projects (water intakes, treatment
30 and conveyance facilities, and reservoirs) would be the same as the Proposed Project. As described in
31 Section 2A, Proposed Project and Alternatives, there would be fewer groundwater projects (wells,
32 wellhead treatment, conveyance facilities, ocean desalination projects, recycled wastewater and
33 stormwater projects (treatment and conveyance facilities), water transfers, and water use efficiency and
34 conservation programs would be reduced relative to the Proposed Project.

35 Projects to restore the Delta ecosystem would be reduced relative to the Proposed Project and the
36 implementation of flow objectives that could lead to a more natural flow regime in the Delta would not be
37 accelerated. Stressor management activities and invasive species management (including removal of
38 invasive vegetation) would be the same as described for the Proposed Project.

39 Project and actions to improve water quality would be the same as under the Proposed Project. Flood risk
40 reduction projects also would be the same as the Proposed Project, except that levee maintenance and
41 modification would be less emphasized on levees that protect agricultural land and more emphasis on
42 levees that protect water supply corridors, which could result in an overall reduction in these activities.
43 Projects to protect and enhance the Delta as an evolving place would be the same as the Proposed Project.

1 18.4.5.1.1 Impact 18-1: Impair, Degrade, or Eliminate Recreational Facilities and Activities

2 The same types of temporary recreational impacts from construction and operation of water supply
3 reliability projects would occur under Alternative 1A as described under the Proposed Project. However,
4 degradation, impairment, or elimination of recreational facilities or activities due to groundwater projects,
5 ocean desalination projects, recycled wastewater and stormwater projects, water transfers, and water use
6 efficiency would be less likely under Alternative 1A than the Proposed Project. Construction impacts
7 associated with ecosystem restoration also would be reduced because fewer projects would be
8 constructed. This reduction in activity and construction would decrease the potential for recreational
9 resources to be adversely affected; however, the potential benefits to recreation associated with the
10 benefits to biological resources resulting from ecosystem restoration and projects that support habitat
11 development (e.g., setback levees and floodplain expansion), would not be realized.

12 Projects and actions to improve water quality would be the same as under the Proposed Project. Flood
13 risk reduction projects also would be the same as under the Proposed Project, except that there would be
14 less emphasis on levee modification for levees that protect agricultural land and more emphasis on levees
15 that protect water supply corridors, which could result in an overall reduction in these activities. Projects
16 to protect and enhance the Delta as an evolving place would be the same as for the Proposed Project.

17 Overall, significant impacts related to impairment or degradation of recreational facilities and activities
18 under Alternative 1A would be **less than** under the Proposed Project.

19 As compared to existing conditions, the impacts related to impairment or degradation of recreational
20 facilities and activities under Alternative 1A would be **significant**.

21 18.4.5.1.2 Impact 18-2: Increase the Use of Existing Recreational Facilities Such That Substantial 22 Physical Deterioration of the Facility Would Occur or Be Accelerated

23 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
24 Alternative 1A for the reasons described in Section 18.4.5.1.1. Because impacts on existing recreational
25 facilities would be reduced, recreational users would be less likely to be displaced to other facilities and
26 the potential for substantial physical deterioration of these facilities would be less than under the
27 Proposed Project.

28 Overall, significant impacts associated with physical deterioration of existing facilities due to increased
29 use under Alternative 1A would be **less than** under the Proposed Project.

30 As compared to existing conditions, the impacts associated with physical deterioration of existing
31 facilities due to increased use under Alternative 1A would be **significant**.

32 18.4.5.1.3 Impact 18-3: Require the Construction or Expansion of Recreational Facilities Which 33 Might Have an Adverse Physical Effect on the Environment

34 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
35 Alternative 1A for the reasons described in Section 18.4.5.1.1. Because impacts on existing recreational
36 facilities would be reduced, the likelihood that construction or expansion of recreational facilities would
37 be required and the potential for construction or expansion of recreational facilities that would have an
38 adverse physical effect on the environment would be less than under the Proposed Project.

39 Overall, significant impacts associated with construction or expansion of recreational facilities under
40 Alternative 1A would be **less than** under the Proposed Project.

41 As compared to existing conditions, the impacts associated with construction or expansion of recreational
42 facilities under Alternative 1A would be **significant**.

1 **18.4.5.2 Mitigation Measures**

2 Mitigation measures for impacts associated with Alternative 1A would be the same as those described for
3 the Proposed Project in Sections 18.4.3.6.1 (Mitigation Measure 18-1), 18.4.3.6.2 (Mitigation
4 Measure 18-2), 18.4.3.6.3 (Mitigation Measure 18-3), and 18.4.3.6.4 (Mitigation Measure 1-4). Because it
5 is not known whether the mitigation measures listed above would reduce impacts to a
6 less-than-significant level for Alternative 1A, these potential impacts are considered **significant**
7 **and unavoidable**.

8 **18.4.6 Alternative 1B**

9 Under Alternative 1B, the construction and operation of surface water projects (water intakes, treatment
10 and conveyance facilities, and reservoirs) would be the same as the Proposed Project. As described in
11 Section 2A, Proposed Project and Alternatives, there would be fewer groundwater projects (wells,
12 wellhead treatment, and conveyance facilities), recycled wastewater and stormwater projects (treatment
13 and conveyance facilities), water transfers, and water use efficiency and conservation programs would be
14 reduced relative to the Proposed Project. There would be no ocean desalination projects.

15 Projects to restore the Delta ecosystem would be reduced in extent relative to the Proposed Project and
16 would not emphasize restoration of floodplains in the lower San Joaquin River. Implementation of flow
17 objectives would not be accelerated or include public trust considerations. Stressor management activities
18 and invasive species management (including removal of invasive vegetation) would be increased relative
19 to the Proposed Project, but a variance to the USACE Levee Vegetation Policy would not be pursued.
20 In addition, Alternative 1B would not require conformance with the habitat types and elevation maps
21 presented in the Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological
22 Management Zone and the Sacramento and San Joaquin Valley Regions (DFG 2011c).

23 Water quality improvement projects, including water treatment plants, conveyance facilities, and wells
24 and wellhead treatment facilities would be less emphasized relative to the Proposed Project, and greater
25 emphasis would be placed on the construction and operation of wastewater treatment and recycle
26 facilities, and municipal stormwater treatment facilities.

27 Flood risk reduction would place greater emphasis on levee modification/maintenance and dredging than
28 the Proposed Project, but there would be no setback levees or subsidence reversal projects. Floodplain
29 expansion projects would be fewer or less extensive, as would reservoir reoperation. Actions to protect
30 and enhance the Delta as an evolving place would be consistent with the Economic Sustainability Plan,
31 but the locations for new parks, as encouraged by the Proposed Project, would not be emphasized.

32 **18.4.6.1.1 Impact 18-1: Impair, Degrade, or Eliminate Recreational Facilities and Activities**

33 The same types of temporary recreational impacts from construction and operation of water supply
34 reliability projects would occur under Alternative 1B as described under the Proposed Project. However,
35 degradation, impairment, or elimination of recreational facilities or activities due to groundwater projects,
36 ocean desalination projects, recycled wastewater and stormwater projects, water transfers, and water use
37 efficiency would be less likely under Alternative 1B than the Proposed Project.

38 Alternative 1B would not require conformance with the habitat types and elevation maps presented in the
39 Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management
40 Zone and the Sacramento and San Joaquin Valley Regions (DFG 2011c), which could reduce the amount
41 of tidal marsh that would be restored, leading to a reduction in recreational impacts because fewer
42 projects would be constructed.

1 Under Alternative 1B, the emphasis on the types of water quality improvement projects would shift
2 toward more wastewater treatment and recycle facilities and more municipal stormwater treatment
3 facilities and fewer of the other types of water quality improvement facilities. It is unclear if this shift
4 would result in more or less construction activity; therefore, recreational impacts are expected to be
5 similar to those under the Proposed Project.

6 Flood risk reduction projects also would be the same as under the Proposed Project, except that there
7 would be less emphasis on levee modification for levees that protect agricultural land and more emphasis
8 on levees that protect water supply corridors, which could result in an overall reduction in these activities.
9 Projects to protect and enhance the Delta as an evolving place would be the same as for the Proposed
10 Project, except that new parks (and recreational benefits associated with new parks) would be less likely
11 under Alternative 1B than under the Proposed Project.

12 Overall, significant impacts related to impairment or degradation of recreational facilities and activities
13 under Alternative 1B would be **less than** under the Proposed Project.

14 As compared to existing conditions, the impacts related to impairment or degradation of recreational
15 facilities and activities under Alternative 1B would be **significant**.

16 18.4.6.1.2 Impact 18-2: Increase the Use of Existing Recreational Facilities Such That Substantial 17 Physical Deterioration of the Facility Would Occur or Be Accelerated

18 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
19 Alternative 1B for the reasons described in Section 18.4.6.1.1. Because impacts on existing recreational
20 facilities would be reduced, recreational users would be less likely to be displaced to other facilities and
21 the potential for substantial physical deterioration of these facilities would be less than under the
22 Proposed Project.

23 Overall, significant impacts associated with physical deterioration of existing facilities due to increased
24 use under Alternative 1B would be **less than** under the Proposed Project.

25 As compared to existing conditions, the impacts associated with physical deterioration of existing
26 facilities due to increased use under Alternative 1B would be **significant**.

27 18.4.6.1.3 Impact 18-3: Require the Construction or Expansion of Recreational Facilities Which 28 Might Have an Adverse Physical Effect on the Environment

29 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
30 Alternative 1B for the reasons described in Section 18.4.6.1.1. Because impacts on existing recreational
31 facilities would be reduced, the likelihood that construction or expansion of recreational facilities would
32 be required and the potential for construction or expansion of recreational facilities that would have an
33 adverse physical effect on the environment would be less than under the Proposed Project.

34 Overall, significant impacts associated with construction or expansion of recreational facilities under
35 Alternative 1B would be **less than** under the Proposed Project.

36 As compared to existing conditions, the impacts associated with construction or expansion of recreational
37 facilities under Alternative 1B would be **significant**.

1 **18.4.6.2 Mitigation Measures**

2 Mitigation measures for impacts associated with Alternative 1B would be the same as those described for
3 the Proposed Project in Sections 18.4.3.6.1 (Mitigation Measure 18-1), 18.4.3.6.2 (Mitigation
4 Measure 18-2), 18.4.3.6.3 (Mitigation Measure 18-3), and 18.4.3.6.4 (Mitigation Measure 1-4). Because it
5 is not known whether the mitigation measures listed above would reduce impacts to a
6 less-than-significant level for Alternative 1B, these potential impacts are considered **significant**
7 **and unavoidable**.

8 **18.4.7 Alternative 2**

9 As described in Section 2A, Proposed Project and Alternatives, Alternative 2 would place greater
10 emphasis on groundwater, ocean desalination, water transfers, water use efficiency and conservation, and
11 recycled water projects and less emphasis on surface water projects. The surface storage reservoirs
12 considered under the DWR Surface Water Storage Investigation would not be encouraged; instead, the
13 surface storage in the Tulare Basin would be emphasized. Ecosystem restoration projects similar to, but
14 less extensive than those encouraged by the Proposed Project, would be emphasized without the
15 requirement to conform to the ERP habitat types and elevation map. Alternative 2 would emphasize the
16 development of flow objectives that take into consideration updated flow criteria that support a more
17 natural flow regime, water rights, and greater protection of Public Trust resources.

18 Actions to improve water quality would be similar to or greater than the Proposed Project, especially the
19 treatment of wastewater and agricultural runoff. Actions to reduce flood risk under Alternative 2 would
20 emphasize floodplain expansion and reservoir reoperation rather than levee construction and
21 modification. The stockpiling of materials and encouragement of subsidence reversal projects would be
22 the same as the Proposed Project, as would actions to protect and enhance the Delta as an evolving place.

23 **18.4.7.1.1 Impact 18-1: Impair, Degrade, or Eliminate Recreational Facilities and Activities**

24 The same types of temporary recreational impacts from construction and operation of water supply
25 reliability projects would occur under Alternative 2 as described under the Proposed Project. However,
26 there would be more construction of groundwater, ocean desalination, and recycled water facilities under
27 Alternative 2, potentially resulting in a greater likelihood that recreational facilities or activities would be
28 degraded, impaired, or eliminated under Alternative 2 than the Proposed Project. Because Alternative 2
29 would not encourage surface storage at the locations considered by the DWR Surface Water Storage
30 Investigation, the significant impacts on recreational facilities or activities that could result from those
31 projects would not occur. This project would partially restore the historic Tulare Lake and potentially
32 include new recreation and wildlife viewing opportunities. However, this project, due to size and scope of
33 construction and operations, has the potential to result in significant impacts to recreational resources.

34 Alternative 2 would not require conformance with the habitat types and elevation maps presented in the
35 Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management
36 Zone and the Sacramento and San Joaquin Valley Regions (DFG 2011c), which could reduce the amount
37 of tidal marsh that would be restored, leading to a reduction in recreational impacts because fewer
38 projects would be constructed.

39 Projects to improve water quality under Alternative 2 could result in additional emphasis on the treatment
40 of agricultural runoff, but overall the impacts of water quality improvement activities on recreation should
41 be similar to those of the Proposed Project. The reduction in levee construction, modification, and
42 maintenance under Alternative 2 would reduce the potential to adversely affect recreational resources.
43 Projects to protect and enhance the Delta as an evolving place would be the same as for the
44 Proposed Project.

1 Overall, significant impacts related to impairment or degradation of recreational facilities and activities
2 under Alternative 2 would be **less than** under the Proposed Project.

3 As compared to existing conditions, the impacts related to impairment or degradation of recreational
4 facilities and activities under Alternative 2 would be **significant**.

5 18.4.7.1.2 Impact 18-2: Increase the Use of Existing Recreational Facilities Such That Substantial 6 Physical Deterioration of the Facility Would Occur or Be Accelerated

7 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
8 Alternative 2 for the reasons described in Section 18.4.7.1.1. Because impacts on existing recreational
9 facilities would be reduced, recreational users would be less likely to be displaced to other facilities and
10 the potential for substantial physical deterioration of these facilities would be less than under the
11 Proposed Project.

12 Overall, significant impacts associated with physical deterioration of existing facilities due to increased
13 use under Alternative 2 would be **less than** under the Proposed Project.

14 As compared to existing conditions, the impacts associated with physical deterioration of existing
15 facilities due to increased use under Alternative 2 would be **significant**.

16 18.4.7.1.3 Impact 18-3: Require the Construction or Expansion of Recreational Facilities Which 17 Might Have an Adverse Physical Effect on the Environment

18 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
19 Alternative 2 for the reasons described in Section 18.4.7.1.1. Because impacts on existing recreational
20 facilities would be reduced, the likelihood that construction or expansion of recreational facilities would
21 be required and the potential for construction or expansion of recreational facilities that would have an
22 adverse physical effect on the environment would be less than under the Proposed Project.

23 Overall, significant impacts associated with construction or expansion of recreational facilities under
24 Alternative 2 would be **less than** under the Proposed Project.

25 As compared to existing conditions, the impacts associated with construction or expansion of recreational
26 facilities under Alternative 2 would be **significant**.

27 18.4.7.2 Mitigation Measures

28 Mitigation measures for impacts associated with Alternative 2 would be the same as those described for
29 the Proposed Project in Sections 18.4.3.6.1 (Mitigation Measure 18-1), 18.4.3.6.2 (Mitigation
30 Measure 18-2), 18.4.3.6.3 (Mitigation Measure 18-3), and 18.4.3.6.4 (Mitigation Measure 1-4). Because it
31 is not known whether the mitigation measures listed above would reduce impacts to a
32 less-than-significant level for Alternative 2, these potential impacts are considered **significant**
33 **and unavoidable**.

34 18.4.8 Alternative 3

35 As described in Section 2A, Proposed Project and Alternatives, the water supply reliability projects and
36 actions under Alternative 3 would be similar to those of the Proposed Project, although there would less
37 emphasis on surface water projects. Ecosystem restoration (floodplain restoration, riparian restoration,
38 tidal marsh restoration, and floodplain expansion) would be reduced compared the Proposed Project, and
39 restoration on publicly owned lands, especially in Suisun Marsh and the Yolo Bypass, would be
40 emphasized. There would be more stressor management actions (e.g., programs for water quality, water
41 flows) and more management for nonnative invasive species. Water quality improvements would be the
42 same as for the Proposed Project. Actions under Alternative 3 to reduce flood risk would not include
43 setback levees or subsidence reversal, but would result in greater levee modification/maintenance and

1 dredging relative to the Proposed Project. Reservoir reoperation and materials stockpiling would be the
2 same as the Proposed Project, as would activities to protect and enhance the Delta as an evolving place.

3 18.4.8.1.1 Impact 18-1: Impair, Degrade, or Eliminate Recreational Facilities and Activities

4 With the exception of the surface water storage projects named in the Delta Plan, a similar number of
5 water supply reliability facilities (groundwater, ocean desalination, and recycled water facilities) would be
6 constructed under Alternative 3 and under Proposed Project. Fewer recreational facilities could be
7 exposed to the same or a similar level of impact from the construction of treatment facilities, but there
8 would be potentially fewer facilities exposed to construction-related activities due to surface water
9 storage projects.

10 Construction-related impacts on recreational facilities and activities during ecosystem restoration could be
11 less with Alternative 3 than with the Proposed Project because restoration activities would be less
12 extensive. However, because restoration activities would be concentrated on public lands (where
13 recreation facilities are more prevalent) rather than on private, mostly agricultural lands, the number of
14 recreational facilities or activities likely to be degraded, impaired, or eliminated under Alternative 3 could
15 be greater than the proposed project. Flood risk reduction projects described, including construction of
16 levees in the Delta, may be less likely under Alternative 3 because flood risk management would
17 emphasize modification of existing levees, dredging, and dam operations; and impacts due to floodplain
18 expansion would be less likely than under the Proposed Project. Because fewer setback levees will be
19 constructed and less subsidence reversal will take place under Alternative 3, impacts to recreation
20 facilities on levees, such as marinas, would be slightly less likely than under the Proposed Project.

21 Overall, significant impacts related to impairment or degradation of recreational facilities and activities
22 under Alternative 3 would be **less than** under the Proposed Project.

23 As compared to existing conditions, the impacts related to impairment or degradation of recreational
24 facilities and activities under Alternative 3 would be **significant**.

25 18.4.8.1.2 Impact 18-2: Increase the Use of Existing Recreational Facilities Such That Substantial 26 Physical Deterioration of the Facility Would Occur or Be Accelerated

27 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
28 Alternative 3 for the reasons described in Section 18.4.8.1.1. Because impacts on existing recreational
29 facilities would be reduced, recreational users would be less likely to be displaced to other facilities and
30 the potential for substantial physical deterioration of these facilities would be less than under the
31 Proposed Project.

32 Overall, significant impacts associated with physical deterioration of existing facilities due to increased
33 use under Alternative 3 would be **less than** under the Proposed Project.

34 As compared to existing conditions, the impacts associated with physical deterioration of existing
35 facilities due to increased use under Alternative 3 would be **significant**.

36 18.4.8.1.3 Impact 18-3: Require the Construction or Expansion of Recreational Facilities Which 37 Might Have an Adverse Physical Effect on the Environment

38 Impacts on existing recreational facilities would be reduced relative to the Proposed Project under
39 Alternative 3 for the reasons described in Section 18.4.8.1.1. Because impacts on existing recreational
40 facilities would be reduced, the likelihood that construction or expansion of recreational facilities would
41 be required and the potential for construction or expansion of recreational facilities that would have an
42 adverse physical effect on the environment would be less than under the Proposed Project.

43 Overall, significant impacts associated with construction or expansion of recreational facilities under
44 Alternative 3 would be **less than** under the Proposed Project.

1 As compared to existing conditions, the impacts associated with construction or expansion of recreational
2 facilities under Alternative 3 would be **significant**.

3 **18.4.8.2 Mitigation Measures**

4 Mitigation measures for impacts associated with Alternative 3 would be the same as those described for
5 the Proposed Project in Sections 18.4.3.6.1 (Mitigation Measure 18-1), 18.4.3.6.2 (Mitigation
6 Measure 18-2), 18.4.3.6.3 (Mitigation Measure 18-3), and 18.4.3.6.4 (Mitigation Measure 1-4). Because it
7 is not known whether the mitigation measures listed above would reduce impacts to a
8 less-than-significant level for Alternative 3, these potential impacts are considered **significant**
9 **and unavoidable**.

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