

3.18 Recreation

This section describes the lands and waters (both reservoirs and rivers) used for recreation and the recreational access and facilities that support those uses in the study area. In addition, this section identifies the types of recreation opportunities with the potential to be affected by implementation of the proposed program. The types of recreation that could be affected by the program are primarily water-based activities such as motorized and nonmotorized boating, angling from a boat, river floating, and swimming; however, land-based activities such as hunting, wildlife viewing, and hiking could also be affected. This section is composed of the following subsections:

- Section 3.18.1, “Environmental Setting,” describes the physical conditions in the program study area as they apply to recreation.
- Section 3.18.2, “Regulatory Setting,” summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program’s impacts on recreation.
- Section 3.18.3, “Analysis Methodology and Thresholds of Significance,” describes the methods used to assess the environmental effects of the proposed program and lists the thresholds used to determine the significance of those effects.
- Section 3.18.4, “Environmental Impacts and Mitigation Measures for NTMAs,” discusses the environmental effects of the near-term management activities (NTMAs) and provides mitigation measures for significant environmental effects.
- Section 3.18.5, “Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMA’s,” discusses the environmental effects of the long-term management activities (LTMA’s), provides mitigation measures for significant environmental effects, and addresses conditions in which any impacts would be too speculative for evaluation (CEQA Guidelines, Section 15145).

NTMAs and LTMA’s are described in detail in Section 2.4, “Proposed Management Activities.”

3.18.1 Environmental Setting

Information Sources Consulted

Sources of information used to prepare this section include the following:

- Online descriptions and maps of multiple public and private recreational facilities on reservoirs and rivers within the study area
- Recreation studies and plans prepared by or for federal, State, regional, and local agencies (e.g., the U.S. Forest Service (USFS), California Department of Parks and Recreation (State Parks), Yuba County, and local water districts)
- Recreation inventories and assessments conducted in the Sacramento–San Joaquin Delta (Delta), such as the *Sacramento–San Joaquin Delta Boating Needs Assessment 2000–2020* published by the California Department of Boating and Waterways (DBW 2003)
- Online flow data for river segments below reservoirs in the study area

Figures 3.13-1 and 3.13-2 in Section 3.13, “Hydrology,” show the locations of the reservoirs and rivers mentioned in this section. Also, see Figure 3.6-3 in Section 3.6, “Biological Resources—Terrestrial,” for the locations of national wildlife refuges, State wildlife areas, ecological reserves, and State parks and recreation areas.

Geographic Areas Discussed

Recreation resources are discussed separately for the following geographic areas within the study area:

- Extended systemwide planning area (Extended SPA) divided into the Sacramento and San Joaquin Valley and foothills, and the Delta and Suisun Marsh
- Sacramento and San Joaquin Valley watersheds
- SoCal/coastal Central Valley Project/State Water Project (CVP/SWP) service areas

None of the management activities included in the proposed program would be implemented in the SoCal/coastal CVP/SWP service areas. In addition, implementation of the proposed program would not result in long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas (see Section 2.6, “No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries”). Given these conditions, little to no

effect is expected on recreational facilities and activities in the SoCal/coastal CVP/SWP service areas located outside of the Sacramento and San Joaquin Valley and foothills and the Sacramento and San Joaquin Valley watersheds (including SWP reservoirs in this area); therefore, that geographic area is not discussed in detail in this section.

Extended Systemwide Planning Area

Sacramento and San Joaquin Valley and Foothills

Lakes and Multipurpose Reservoirs Federal, State, regional, and local agencies have built large multipurpose reservoirs on the Sacramento and San Joaquin rivers and on major and minor tributaries to those rivers. Recreation opportunities and facilities are provided in the Sacramento and San Joaquin Valley and foothills by 17 such reservoirs—six within the Sacramento River Basin and 11 within the San Joaquin River Basin. Each of the reservoirs described below was constructed to provide flood control and for other purposes such as water storage and hydroelectric power generation. Recreation is not among the original purposes of most of the reservoirs; however, all these reservoirs provide water-based, water-related, or water-enhanced (e.g., camping, picnicking, hiking, and boating) recreation opportunities and recreational facilities accessible by the public. One natural lake, Clear Lake, also provides these types of recreation opportunities and facilities.

The largest of the reservoirs in the Sacramento River Basin, Shasta Lake, is located at the confluence of the Sacramento, Pit, and McCloud rivers. Three of the other five reservoirs in the Sacramento River Basin are on major tributaries of the Sacramento River (the Feather, Yuba, and American rivers) on the east side of the basin; the remaining two are on minor Sacramento River tributaries (Stony and Cache creeks) on the basin's west side. The eight largest San Joaquin River Basin reservoirs are located in the foothills on the east side of the San Joaquin Valley. These reservoirs were constructed on the major tributaries to the San Joaquin River (from north to south, the Mokelumne, Calaveras, Stanislaus, Tuolumne, and Merced rivers) and on the San Joaquin River itself. Also within the San Joaquin River Basin are two multipurpose reservoirs located on two minor eastside tributaries to the San Joaquin, the Chowchilla and Fresno rivers; and Los Banos Creek Reservoir, a multipurpose reservoir in the foothills on the west side of the San Joaquin Valley.

Table 3.18-1 lists reservoirs in the Sacramento and San Joaquin Valley and foothills and their recreation resources. The reservoirs are described below.

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Table 3.18-1. Multipurpose Reservoirs and Associated Recreation Amenities in the Sacramento and San Joaquin Valley and Foothills

Reservoir	Location (County or Counties)	Owner	Surface Acres¹	Designated Recreation Areas²	Recreational Facilities³
Sacramento River Basin					
Shasta	Shasta	Reclamation	29,740	NRA	R, M, C, D, T
Black Butte	Tehama	USACE	4,460	RA	R, C, D, T
Oroville	Butte	DWR	15,805	SRA	R, M, C, D, T
New Bullards Bar	Yuba	YCWA	4,810	Three recreation areas	R, M, C, D, T
Indian Valley	Lake	YCFCWCD	4,000	Two recreation areas	R, C, D
Folsom	Sacramento, Placer, and El Dorado	Reclamation	11,450	SRA	R, M, C, D, T
San Joaquin River Basin					
Camanche	San Joaquin, Calaveras, and Amador	EBMUD	7,700	Two recreation areas	R, M, C, D, T
Pardee	Amador and Calaveras	EBMUD	2,134	One recreation area	R, M, C, D, T
New Hogan	Calaveras	USACE	4,410	RA	R, C, D, T
New Melones	Calaveras and Tuolumne	Reclamation	12,500	Two recreation areas	R, M, C, D, T
Tulloch	Calaveras and Tuolumne	OID and SSJID	1,260	Three recreation areas	R, M, C, D, T
Don Pedro	Tuolumne	TID	12,960	Three recreation areas	R, M, C, D, T
McClure & McSwain	Mariposa	MID	7,147	Four recreation areas	R, M, C, D
Eastman	Madera	USACE	1,780	RA	R, C, D, T
Hensley	Madera	USACE	1,500	RA	R, C, D, T
Millerton	Fresno and Madera	Reclamation	4,900	SRA	R, M, C, D, T
Los Banos Creek	Merced	Reclamation	619	SRA	R, C, D, T

Table 3.18-1. Multipurpose Reservoirs and Associated Recreation Amenities in the Sacramento and San Joaquin Valley and Foothills (contd.)

Sources: BLM 2010a; Don Pedro Recreation Agency 2010a; DWR 2010a, 2010b; EBMUD 2010a, 2010b; Emerald Cove Marina 2010; MID 2010; Reclamation 2010a; State Parks 2010a, 2010b, 2010c; Tri-Dam Project 2010; USACE 2010a, 2010b, 2010c

Notes:

¹ Full-pool acreage; most of these reservoirs are drawn down substantially during summer, reducing the surface acreage.

² The federal and State reservoirs are surrounded by designated recreation areas (NRA, SRA, or RA) that encompass the entire reservoir and a substantial amount of shoreline lands. These recreation areas typically include both fee and nonfee sites. Designated recreation areas at reservoirs owned by local agencies or districts are generally more limited in area and most feature commercial recreational facilities, open to the public for a fee.

³ Letter codes used for recreational facilities: R = boat ramps, M = marinas/resorts, C = campgrounds, D = day-use areas, T = trails.

Key:

DWR = California Department of Water Resources

EBMUD = East Bay Municipal Utility District

MID = Merced Irrigation District

NRA = National Recreation Area

OID = Oakdale Irrigation District

RA = Recreation Area (U.S. Army Corps of Engineers)

Reclamation = U.S. Department of the Interior, Bureau of Reclamation

SRA = State Recreation Area (California Department of Parks and Recreation)

SSJID = South San Joaquin Irrigation District

TID = Turlock Irrigation District

USACE = U.S. Army Corps of Engineers

YCFCWCD = Yolo County Flood Control and Water Conservation District

YCWA = Yuba County Water Agency

Sacramento River Basin The following multipurpose reservoirs and natural lake in the Sacramento River Basin are discussed individually below:

- Shasta Lake
- Black Butte Lake
- Lake Oroville
- New Bullards Bar Reservoir
- Indian Valley Reservoir
- Clear Lake (natural lake)
- Folsom Lake

Shasta Lake

Shasta Lake is the largest reservoir in California, with 29,740 surface acres when full. USFS manages the lake and surrounding lands as the centerpiece of the Shasta Unit of the Whiskeytown-Shasta-Trinity National Recreation Area. The lake is used year-round for a wide variety of boating and related activities and for both warmwater and coldwater fishing. Shasta Lake has gained a reputation as a premier houseboating destination. Six USFS public boat ramps and 10 commercial marinas and marina resorts (all of which

operate under USFS special-use permits) are distributed around the lake. Campers may choose from among more than a dozen public campgrounds and designated shoreline camping areas, and from a similar number of campgrounds and recreational vehicle (RV) parks offered at several resorts and marinas on or near the lake (USFS 1996). Shasta Lake is bisected by Interstate 5 (I-5), which provides lake access in 4 hours or less for residents of southern Oregon and northern California, including the major urban populations of Sacramento and the San Francisco Bay Area. Single-day boating-use levels as high as 1,400 boats have been recorded during the peak season (Graefe et al. 2005).

Black Butte Lake

Black Butte Lake is a 4,460-acre reservoir owned and operated by the U.S. Army Corps of Engineers (USACE). Located off I-5 about 100 miles north of Sacramento and 60 miles south of Redding, the lake is situated among volcanic buttes and grasslands in the foothills of the west side of the Sacramento Valley, on Stony Creek. The lake and the USACE-managed recreation area surrounding the lake provide opportunities for boating, fishing, camping, and hiking along 40 miles of shoreline. The recreation area contains two campgrounds, three boat ramps, and three picnic areas. Three self-guided nature trails offer hikes through the rolling oak foothills. Two undeveloped equestrian areas and equestrian trails are also available for horseback riders. The lake is known as an excellent warmwater fishery (USACE 2010a, 2010d).

Lake Oroville

Lake Oroville is located at the confluence of the North, South, and Middle forks of the Feather River, about 70 miles north of Sacramento, and covers 15,500 surface acres at full pool. With 167 miles of shoreline, the lake is the focus of Lake Oroville State Recreation Area (SRA), managed by State Parks (2010a). Major recreational facilities operating around the lake consist of two full-service marinas, five major and several smaller (car-top) boat ramps, three family campgrounds and several boat-in camps, and 10 floating campsites (State Parks 2010a). Lake Oroville SRA also includes Thermalito Diversion Pool and Thermalito Forebay. These instream and offstream regulating reservoirs, respectively, are downstream from Lake Oroville and do not provide substantial flood storage. The facilities at Lake Oroville SRA support a wide variety of recreational opportunities: powered and nonpowered boating, warmwater and coldwater fishing, limited seasonal hunting, developed and primitive camping, picnicking, swimming, horseback riding, hiking, and mountain biking. Visitor information sites offer cultural and informational displays about the developed facilities and the natural environment (State Parks 2010a). Lake Oroville SRA received nearly 1 million visits in fiscal year 2008–2009 (State Parks 2009).

New Bullards Bar Reservoir

New Bullards Bar Reservoir is a 4,810-acre reservoir owned and operated by Yuba County Water Agency (DWR 2010a). The reservoir is situated on the North Fork of the Yuba River in the forested foothills of the Sierra Nevada, about 30 miles northeast of Marysville. Developed recreation areas, all on USFS lands that surround most of the lake, include a full-service marina with a boat ramp and general store, operated by a concessionaire (Emerald Cove Marina 2010). There are also three RV/tent campgrounds, one with a boat ramp, and two boat-in camps; camping permits are issued through the marina concessionaire. All types of boating are permitted on the lake, which has more than 56 miles of shoreline and provides both a coldwater and warmwater fishery (Nevada County Commerce 2010). Trails for hiking and mountain biking are available.

Indian Valley Reservoir

Indian Valley Reservoir is a relatively remote reservoir on the North Fork of Cache Creek, surrounded by chaparral-covered hills and reached via an unpaved road (BLM 2010a). The community of Clear Lake is about a 16-mile drive from the reservoir. The 4,000-acre reservoir is owned and operated by the Yolo County Flood Control and Water Conservation District (YCFCWCD) (DWR 2010a), but is surrounded primarily by federal lands managed by the U.S. Bureau of Land Management (BLM) as the Indian Valley/Walker Ridge Recreation Area (BLM 2010a). The lands immediately surrounding the reservoir are managed by the California Department of Fish and Game (DFG) as the Indian Valley Wildlife Area (DFG 2010a). The reservoir provides opportunities for boating and fishing, but boats are limited to a speed limit of 10 miles per hour (mph)—5 mph within 200 yards of shore. As a result, Indian Valley Reservoir is primarily a fishing lake, with both a coldwater and warmwater fishery. A small and minimally developed campground is available near the dam, as is a primitive hike-in or boat-in camp. A 2.5-mile hiking trail follows the reservoir's west shoreline (BLM 2010a).

Clear Lake

Clear Lake is the largest natural lake entirely within the state of California, with 68 square miles of surface area (AnglerNet 2010). Numerous hotels, resorts, RV parks, and campgrounds are located around the lakeshore (Clear Lake Chamber of Commerce 2010), and 11 public boat ramps are available for public use free of charge (AnglerNet 2010). Clear Lake State Park (SP), on the south shore, provides a visitor center, developed campgrounds and cabins, a boat ramp and marina, picnic sites, swim beach, and hiking trails (State Parks 2010d). The lake's warm and shallow waters support large populations of warmwater game fish, such as largemouth bass and catfish, and bass fishing tournaments are frequently held on the lake (Konocti Harbor 2010).

Folsom Lake

Folsom Lake is located 25 miles east of Sacramento, at the confluence of the North and South forks of the American River, and is owned and operated by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation). With 75 miles of shoreline and 11,450 surface acres of water at full pool, it is the focus of the Folsom Lake SRA, which is operated by State Parks (State Parks 2010b; Wallace Roberts & Todd LLC 2003). The SRA provides several recreational facilities, primarily around the main basin of the lake. Folsom Lake SRA provides two swimming areas, seven boat ramps, two small-boat launches, four picnic areas, and one marina on the shoreline, in addition to two campgrounds and 80 miles of trails on adjacent lands (State Parks 2010b). (The SRA also includes Lake Natoma, a 500-acre reservoir immediately downstream from Folsom Lake that serves as a regulating afterbay for Folsom Lake but does not provide substantial flood storage.) Folsom Lake has both a warmwater and coldwater fishery, and DFG regularly stocks trout and salmon in the lake (LSA Associates 2003). Folsom Lake SRA is the most visited of the 32 SRA units in the State Park system (State Parks 2008), with nearly 1.4 million visitors in fiscal year 2007–2008 (State Parks 2009).

San Joaquin River Basin The following multipurpose reservoirs in the San Joaquin River Basin are discussed individually below:

- Camanche Reservoir
- Pardee Reservoir
- New Hogan Lake
- New Melones Lake
- Tulloch Reservoir
- Don Pedro Lake
- Lake McClure
- Eastman Lake
- Hensley Lake
- Millerton Lake
- Los Banos Creek Reservoir

Camanche Reservoir

Camanche Reservoir is a 7,700-acre reservoir owned and operated by the East Bay Municipal Utility District (EBMUD) (DWR 2010a), situated on the Mokelumne River 15 miles east of Lodi. The concessionaire-operated Camanche Recreation Area offers two developed recreation areas, one on

the reservoir's north shore and one on the south shore (EBMUD 2008). These areas include marinas, RV and tent camping, cottages, and hiking trails (EBMUD 2010a; Camanche Recreation Company 2010). Both coldwater and warmwater fish are planted in the reservoir during winter and spring, providing fisheries and plentiful fishing opportunities (Camanche Recreation Company 2010).

Pardee Reservoir

Just upstream from Camanche Reservoir is Pardee Reservoir, a 2,134-acre reservoir also owned and operated by EBMUD (DWR 2010a). The reservoir offers boating, fishing, and camping opportunities. One concessionaire-operated recreation area on the north shore of Pardee Reservoir provides a full-service marina, store, launch ramp, campgrounds, picnic areas, and fishing docks (EBMUD 2008, 2010b). Unlike Camanche Reservoir, Pardee Reservoir is closed from late October until early February as part of EBMUD's wildlife enhancement program (EBMUD 2010b). Also, swimming, wading, and other body contact activities (activities during which the participant is partially or entirely immersed in the water) are prohibited to protect drinking water supplies. However, the recreation area provides two swimming pools to campers and other visitors (EBMUD 2010b). Weekly plants of rainbow trout provide an excellent coldwater fishery, and warmwater fish are also available to anglers (Pardee Lake Recreation 2010).

New Hogan Lake

New Hogan Lake is a 4,410-acre reservoir owned and operated by USACE (DWR 2010a). The reservoir is on the Calaveras River about 30 miles east of Stockton. The 50 miles of shoreline in the USACE-operated recreation area surrounding the reservoir provides five campgrounds, including a group campground and boat-in campground; four boat ramps; and three picnic areas. Several hiking and mountain biking trails and one equestrian trail link recreation sites. Warmwater fishing predominates on New Hogan Lake, but trout are available in the Calaveras River during the designated season (USACE 2010e, 2010f).

New Melones Lake

New Melones Lake provides 100 miles of shoreline and 12,500 surface acres of water (Reclamation 2010a). The reservoir is on the Stanislaus River, about 6 miles south of Angels Camp. Two developed recreation areas at the reservoir provide three boat launches, five campgrounds, two group camps, six day-use areas, and a marina (Reclamation 2010a). Also located at the reservoir are several hiking and biking trails, as well as a visitor center and museum that provide information on prehistoric and historic use of the Stanislaus River area. Horseback riding is permitted in

the Peoria Wildlife Management Area, which covers 2,500 acres on the southwest side of the lake (Reclamation 2010a).

Tulloch Reservoir

Tulloch Reservoir is a relatively small reservoir owned and operated by Oakdale and South San Joaquin irrigation districts as a component of the Tri-Dam Project (Tri-Dam Project 2010). The narrow, cross-shaped reservoir covers 1,260 acres just downstream from New Melones Lake (DWR 2010a). The reservoir is situated on mostly private land, and much of the recreation activity comes from boaters using privately owned docks in shoreline residential areas. However, at two areas on the lakeshore, privately owned recreational facilities offer services to the public for a fee (Tri-Dam Project 2010). On the south shore, South Lake Tulloch RV Campground and Marina offers RV and tent campsites, as well as cabins, along with a small marina with a store and restaurant (South Lake Tulloch RV Campground & Marina 2010). On the north shore, Lake Tulloch Resort offers overnight accommodations with its own boat ramp and marina (Lake Tulloch Resort 2010).

Don Pedro Lake

Don Pedro Lake is a 12,960-acre reservoir owned and operated by Turlock Irrigation District (DWR 2010a). The reservoir is about 30 miles east of Modesto on the Tuolumne River. There are 160 miles of shoreline around the winding reservoir, which has three main developed recreation areas. Two recreation areas at the lower end of the lake, near the dam, provide a marina, two boat ramps, and two picnic areas. A recreation area on the upper end of the reservoir provides a marina, boat ramp, and campground. Boat-in camping is also permitted in designated undeveloped shoreline areas (Don Pedro Recreation Agency 2010a).

Lake McClure

Lake McClure is a 7,147-acre reservoir on the Merced River, owned and operated by Merced Irrigation District (DWR 2010a). The lower end of the winding, narrow reservoir is about 35 miles northeast of Merced. The reservoir has more than 80 miles of shoreline, along which are four major developed recreation areas. Each of the recreation areas offers a campground, picnic area, and boat ramp and two of the recreation areas offer a marina. The lake offers fishing for both coldwater and warmwater species, with trout, salmon, and bass stocking programs (MID 2010). (Merced Irrigation District also owns Lake McSwain, a small (300-acre) reservoir immediately downstream from Lake McClure that serves as a regulating afterbay for Lake McClure but does not provide substantial flood storage.)

Eastman Lake

Eastman Lake is a small USACE reservoir, covering 1,780 acres at full pool (DWR 2010a). The lake is on the Chowchilla River, 23 miles northeast of Chowchilla. The USACE-operated recreation area surrounding the reservoir offers a family campground, a group campground, two boat ramps, and two day-use areas. The lake has been designated a Trophy Bass Fishery by DFG, and rainbow trout are planted during winter. Trails are available for hikers, mountain bike riders, and equestrians (USACE 2010b, 2010g).

Hensley Lake

Eight miles southeast of Eastman Lake is Hensley Lake, also a small USACE reservoir, covering 1,500 acres at full pool (DWR 2010a). The lake is on the Fresno River, 17 miles northeast of Madera. The USACE-operated recreation area surrounding the reservoir offers family and group camping areas, two boat ramps, and a day-use area with picnic sites and a swim beach. The lake contains warmwater game fish such as bass and catfish, and rainbow trout are planted during winter. Trails are available for hikers, mountain bike riders, and equestrians, and hunting is permitted in a 500-acre wildlife area (USACE 2010c, 2010h).

Millerton Lake

Millerton Lake is owned and operated by Reclamation and has a surface area of approximately 4,900 acres at full pool (DWR 2010a). Located approximately 20 miles northeast of Fresno, this lake is the centerpiece of the Millerton Lake SRA, managed by State Parks. The SRA encompasses nearly 2,000 acres of land around the lake (State Parks 2009). Motorboating, sailing, water-skiing, use of personal watercraft, swimming, and fishing are the primary water-based recreation activities. Shoreline activities are picnicking, hiking, biking, horseback riding, seasonal hunting, camping, and wildlife viewing. The SRA has several recreational facilities to support these activities: five boat ramps, several picnic areas, drive-in and walk-in campgrounds, and a marina (State Parks 2010c). There are also 22 miles of trails within the Millerton Lake SRA for hiking, mountain biking, and equestrian use (State Parks 2009, 2010c).

Los Banos Creek Reservoir

Reclamation's Los Banos Creek Reservoir is a 619-acre reservoir on Los Banos Creek, about 8 miles from the city of Los Banos. The reservoir is managed as part of the San Luis Reservoir SRA, operated by State Parks (San Luis Reservoir lies about 10 miles to the northwest). The SRA provides a minimally developed campground and picnic area, a primitive equestrian campground, and a boat ramp. Boat speeds are limited to 5 mph; therefore, fishing is the primary boat-based activity. Warmwater game fish

such as bass and catfish, as well as planted trout, are available in this reservoir (State Parks 2010e).

River Reaches Downstream from Multipurpose Reservoirs The river reaches downstream from the multipurpose reservoirs described above provide various water-based recreation options. The predominant options are powered and nonpowered boating and fishing, both from a boat and from shore or by wading. Many of these river reaches contain salmon, steelhead, and other anadromous fish species, which benefit from releases of cold water from the reservoirs. Other water-enhanced activities that may be pursued along the rivers are camping, picnicking, and hiking. A variety of federal, State, regional, and local agencies and private entities provide recreation lands and facilities along the rivers. The Sacramento and Feather rivers also provide access to numerous islands, oxbow lakes, and gravel bars managed by federal and State wildlife agencies for wildlife and wildlife-dependent activities such as hunting and wildlife watching.

Sacramento River Downstream from Shasta Lake Recreation opportunities available along the Sacramento River downstream from Shasta Lake are discussed below by geographic area, as follows:

- Keswick Reservoir
- Keswick Dam to Red Bluff Diversion Dam
- Red Bluff Diversion Dam to the Delta

Keswick Reservoir

Keswick Reservoir occupies nearly the full length of the narrow Sacramento River gorge that stretches 9 miles from Shasta Dam to Keswick Dam. The reservoir has a healthy population of wild trout, including browns and rainbows. The 8.4-mile Sacramento River Rail Trail, a nonmotorized-use National Recreation Trail, follows an old railroad line that closely follows the west side of both the river and the shoreline of Keswick Reservoir. The wide and generally flat trail is open to equestrians, hikers, and bicyclists year-round.

Keswick Dam to Red Bluff Diversion Dam

The area between Keswick Dam and Red Bluff Diversion Dam (RBDD) encompasses about 60 miles of the Sacramento River. This area contains the majority of recreation resources and public-access sites on the river, with more than 40 recreation/public-access sites: day-use sites, boat launches, trail accesses, fishing accesses, RV parks, wildlife areas, and undeveloped open-space areas.

The river flows past cities and towns and both private and public lands. The riparian forests along the river, oak woodlands and grasslands on higher ground, and riverside bluffs provide a scenic setting for users of riverside recreational facilities and for boaters and anglers on the river. The riparian landscape between Redding and Red Bluff is described as the most unspoiled of the entire 375-mile river. BLM owns and manages much of the riverside lands between Balls Ferry and Red Bluff (approximately River Mile (RM) 250 to RM 276).

River use and recreation opportunities vary throughout the year with the highly variable flow of the river. During winter and spring, the Sacramento River is usually flowing above 20,000–30,000 cubic feet per second (cfs) and may have short-term peak flows of 80,000–90,000 cfs. Flows are less variable during summer and fall, with typical flows of 10,000–15,000 cfs and 5,000–10,000 cfs, respectively. The temperature of the river is cold year-round because water is released from the deep cold-water strata of Keswick Reservoir and Shasta Lake upstream. Winter water temperatures are in the 40s Fahrenheit, and summer water temperatures do not rise above the mid-50s.

The Sacramento River is known for good fishing. Species such as salmon, steelhead, rainbow trout, sunfish, largemouth bass, and striped bass can be found within the river. Fly fishing is popular, especially when flows are 5,000–8,000 cfs, which is typical during fall and early winter.

Boating opportunities are abundant along the Sacramento River from Keswick Dam to Red Bluff. Eight sites along the river provide public boat ramps, and two additional sites permit car-top launching and retrieval.

Trail activities such as walking, jogging, bicycling, and horseback riding occur along this stretch of the river. There are numerous sites with trails or trail access. The most notable trails along this section of river are the Sacramento River Trail and the trails that connect BLM lands below Balls Ferry (BLM 2010b).

Hunting occurs primarily on BLM land along the Sacramento River. The main hunting areas along the river are Inks Creek, Massacre Flat, Perry Riffle, Paynes Creek, Bald Hill, and Iron Canyon. Hunting is permitted on BLM land unless posted as closed (e.g., along some hiking trails and at developed recreation areas). Game species found on BLM lands include quail, dove, waterfowl, deer, pig, bear, and turkey (BLM 2010b).

Developed camping along or near the river occurs mainly at privately operated RV parks and fishing resorts, and at the public Lake Red Bluff Recreation Area. Most camping opportunities are for RVs, but a few tent

and group camping sites are available. Primitive camping is available at several sites within the BLM Sacramento River Area, between about Battle Creek and Paynes Creek, about 10 miles upstream from RBDD. River visitors may also camp on undeveloped BLM land within the area. The mouth of Inks Creek and the areas 0.75 mile above and below the mouth are closed to camping (BLM 2010b).

The Sacramento River corridor provides an attractive setting for picnickers. Many sites along this river reach provide picnicking facilities: municipal parks, RV parks and fishing resorts (private facilities), William B. Ide Adobe State Historic Park, boat ramps, and fishing access sites. Generally, these facilities feature picnic tables, shade structures (or trees), and barbeque pits.

Red Bluff Diversion Dam to the Delta

Recreation opportunities on the Sacramento River downstream from RBDD include hunting, fishing, boating, RV/tent/group camping, birding, wildlife viewing, picnicking, and hiking. The 100-mile stretch of river down to Colusa includes many parcels of public conservation and recreation lands, as well as a few privately owned commercial recreation sites. Primary landowners on the river are the U.S. Fish and Wildlife Service (USFWS), with more than two dozen units of the Sacramento River National Wildlife Refuge (NWR) totaling more than 9,000 acres (many of which are closed to the public); and DFG, with more than 15 units of the Sacramento River Wildlife Area totaling more than 3,700 acres (most open to the public but accessible only by boat). Table 3.18-2 lists recreational facilities at these Sacramento River wildlife areas.

Table 3.18-2. Locations and Recreational Facilities of Wildlife Refuges and Wildlife Areas on the Sacramento River

Wildlife Refuge/Area	Managing Agency	Acres	Recreational Facilities	Location and Access Information
Mouth of Cottonwood Creek Wildlife Area	DFG	571 (two units)	None	Both units are at the confluence of Cottonwood Creek and the Sacramento River, and are accessible by road.
Sacramento River National Wildlife Refuge	USFWS	10,146 (27 units)	Most of the units have no facilities; however, several units provide boat ramps and trails.	The units extend along 77 miles of the river between Red Bluff and Princeton. All but five units are entirely or partially open to the public. Some are accessible only by boat.
Sacramento River Wildlife Area	DFG	4,014 (21 units)	No facilities are provided; several public boat launch sites on the river outside the wildlife area provide access to the river.	The units extend along 50 miles of the river between the northwest corner of Butte County near Corning, and Colusa. All are open to the public, but most are accessible only by boat.

Sources: DFG 2010b, 2010c; USFWS 2010a

Key:

DFG = California Department of Fish and Game

USFWS = U.S. Fish and Wildlife Service

Recreational facilities are located primarily between Red Bluff and the Bidwell–Sacramento River SP near Hamilton City, about 50 river miles downstream. These facilities are located at the State Park and at privately owned RV parks and resorts. Downstream from Bidwell–Sacramento River SP, the number and variety of facilities decrease. Facilities vary from boat ramps and marinas to campgrounds, picnic sites, and trails. In addition to the park mentioned above, State Parks operates two other park units on the river between Red Bluff and Colusa: Woodson Bridge SRA near Corning (RM 218) and Colusa–Sacramento River SRA near Colusa (RM 145).

Feather River Downstream from Lake Oroville Below Lake Oroville, the Feather River runs through Oroville, Gridley, Live Oak, Yuba City, and Marysville before joining the Sacramento River approximately 70 miles below Lake Oroville at Verona. The river flows primarily through private farmland. However, two State wildlife areas and a few riverside recreational facilities operated by local agencies provide recreation opportunities and river access.

Directly downstream from Lake Oroville, the City of Oroville and the Feather River Recreation and Park District (FRRPD) provide three riverside parks that offer river access for fishing, swimming, boating, and

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picnicking. The parks are linked by a bike and pedestrian trail. One park has a small swim lagoon on the river and the largest of the parks provides a recently renovated boat ramp (FRRPD 2010).

Large portions of the lands contained within the 11,869-acre Oroville Wildlife Area, managed by DFG, are on each bank of the Feather River a few miles downstream from Oroville. The wildlife area provides access via gravel levee roads to several miles of the river's banks, as well as two gravel ramps suitable for launching small boats (DFG 2010d). The portion of the Oroville Wildlife Area beginning 1,000 feet downstream from the Thermalito Afterbay outlet to the river is very popular with anglers during salmon fishing season.

There are few places to access the Feather River between the Oroville Wildlife Area and Marysville, about 20 miles to the south. The Riverfront Park Complex in Marysville is devoted primarily to nonriver-related activities such as motorsports and team sports but provides a boat ramp (City of Marysville 2010). A few miles upstream (north) from Marysville, the City of Gridley offers public permit-based access to its Feather River boat ramp, which is located near Gridley's water treatment plant and provides access to a stretch of the river that is otherwise inaccessible (City of Gridley 2010). A few miles south of Marysville, Yuba County provides a boat ramp on the river at Star Bend (Yuba County 2008).

The Feather River Wildlife Area, managed by DFG, provides more than 2,500 acres of riparian forestlands along the river between Marysville and the point where the Feather River meets the Sutter Bypass. Access to the wildlife area's five units is available by boat, from the Star Bend ramp area, or by walk-in access from levee roads. No facilities are provided (DFG 2010e). Table 3.18-3 lists the locations and recreational facilities of the wildlife areas on the Feather River.

American River Downstream from Folsom Lake Most of the first 6 miles of the American River below Folsom Lake is occupied by Lake Natoma, a downstream regulating reservoir for Folsom Lake (see "Folsom Lake" discussion above). Below Lake Natoma, the 23-mile American River Parkway follows the entire stretch of the American River to the Sacramento River confluence. The river is designated as both a National and State Wild and Scenic River. The parkway is administered by the Sacramento County Department of Parks and Recreation (Sacramento County Regional Parks 2010). More than 8 million people visit the parkway each year, participating in activities such as fishing, boating, rafting, picnicking, walking, biking, swimming, horseback riding, and wildlife viewing. Several parks and access points are located along the parkway. The Jedediah Smith Memorial Trail, a 32-mile paved trail that extends the

length of the parkway and Lake Natoma, links many of the parkway’s facilities and access points (Sacramento County Regional Parks 2010).

Table 3.18-3. Locations and Recreational Facilities of Wildlife Areas on the Feather River

Wildlife Area	Managing Agency	Acres	Recreational Facilities	Location and Access Information
Oroville Wildlife Area	DFG	11,869	Primitive camping designated area and gravel boat ramps	Two main areas of the refuge bracket the river a few miles downstream from Oroville. Area is accessible from several highways and county roads. Gravel roads within the wildlife area provide ample river access.
Feather River Wildlife Area	DFG	2,522	None (adjacent Yuba County boat ramp provides boat access)	Wildlife area consists of five nearly contiguous units along 12 miles of the Feather River, upstream from the Sutter Bypass. Some units are accessible only by boat.

Sources: DFG 2010d, 2010e

Key:

DFG = California Department of Fish and Game

Stony Creek Downstream from Black Butte Lake Stony Creek flows southeast from Black Butte Lake to the confluence of the Sacramento River, approximately 24 miles. Although USACE releases 150–300 cfs to the creek during summer (USACE 2010i), there are no public recreation areas on the creek. The incised creek flows through broad gravel beds deposited by the creek’s former braided channels. Large gravel-mining operations, severe streambank erosion, and increasing infestations of the invasive nonnative plant species giant reed (*Arundo donax*) and salt cedar (*Tamarix* spp.) are ongoing characteristics of Stony Creek (Glenn County RCD 2010); these factors and the lack of public access likely limit recreation use. A unit of the Sacramento River NWR (described above under “Red Bluff Diversion Dam to the Delta”) is located at the confluence of the creek with the Sacramento River.

North Fork of Cache Creek and Cache Creek Downstream from Indian Valley Reservoir The North Fork of Cache Creek flows west then south several miles, primarily through rugged BLM land and rural residential areas, before joining the South Fork to form the main-stem Cache Creek, which flows east into the Sacramento Valley. The flow of the North Fork of Cache Creek is regulated by Indian Valley Dam; the flow of the main

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stem is also regulated by Cache Creek Dam, 5 miles downstream from Clear Lake. (The South Fork of Cache Creek flows out of Clear Lake, several miles to the west of the junction of the two forks. See the following discussion of the South Fork of Cache Creek.) For much of its route to the valley, the creek flows through Cache Creek Natural Area, a combination of more than 70,000 acres of BLM-managed lands and several thousand acres of State and county lands (BLM 2010c). The Cache Creek Natural Area is primarily primitive with no developed facilities; much of the area through which the creek flows is a federally designated Wilderness Area. However, creek access is available at a trailhead on DFG land (DFG 2010f) and at Yolo County's Cache Creek Regional Park (Yolo County 2010a). At this regional park, whitewater rafting concessionaires offer rafting outings on Cache Creek (Whitewater Adventures 2010), the nearest such whitewater opportunity to the San Francisco Bay Area. The sections of the creek upstream and downstream from Cache Creek Regional Park are also popular with whitewater kayakers (California Creeks 2010).

Downstream from the regional park, in the Capay Valley, are two additional Yolo County parks, Camp Haswell and Vernon Nichols, which provide creek access to boaters, anglers, and swimmers, and day-use facilities (Yolo County 2010b, 2010c). Thirty-one miles of Cache Creek are designated as a State Wild and Scenic River. At the south end of the Capay Valley, where the creek enters the Sacramento Valley, much of the flow is diverted for agricultural use at the Capay Diversion Dam. Cache Creek flows into Cache Creek Settling Basin and except for summer months has flow for most of the year. During high flow, Cache Creek flows reach the Yolo Bypass.

South Fork of Cache Creek Downstream from Clear Lake The South Fork of Cache Creek flows southeast out of Clear Lake for several miles before joining with the North Fork to form the main stem of Cache Creek. Near the mouth of the South Fork of Cache Creek, State Parks operates Anderson Marsh State Historic Park, which provides access to the creek for fishing and several trails on the adjacent marshes and uplands (State Parks 2010f). The flow of the South Fork is regulated by Cache Creek Dam, 5 miles downstream from Clear Lake (YCFCWCD 2010). Boaters can paddle or motor from the marshes of Clear Lake to Cache Creek Dam, providing a scenic 10-mile round trip (Konocti Trails 2010). Cache Creek Dam, owned by YCFCWCD, releases flows of 100–700 cfs or more to the creek during much of the summer peak-boating period, depending on hydrologic conditions and downstream water needs (YCFCWCD 2010; USGS 2010). These flows join with those of the North Fork to provide commercial and private boaters with whitewater boating opportunities, as discussed above. Downstream from Cache Creek Dam, the South Fork

flows primarily through BLM lands before joining with the North Fork, with little public access or use in that reach.

San Joaquin River Downstream from Millerton Lake The San Joaquin River has relatively few developed recreational facilities or access sites, with the exception of the San Joaquin River Parkway, which begins just below Friant Dam. The lands near the river downstream from the parkway are managed primarily for agricultural land uses; however, several federal wildlife refuges and State wildlife management areas are located on or near the river, along with several State Park units. Some of these are directly adjacent to the San Joaquin River, while others are some distance away from the river, but within the San Joaquin Valley.

Recreation opportunities available along the San Joaquin River downstream from Millerton Lake are discussed below by geographic area, as follows:

- Friant Dam to Merced River
- Merced River to the Delta

Friant Dam to Merced River

The San Joaquin River Parkway is a mosaic of parks, trails, and ecological reserves located along the San Joaquin River between Friant Dam (Millerton Lake) and State Route 145, managed by the San Joaquin River Parkway and Conservation Trust. The parkway is undergoing development under the management of the San Joaquin River Conservancy, with a planning area extending along 23 miles of the river below Friant Dam. Approximately a dozen developed and undeveloped park units operate in the parkway, owned and managed by several public and private entities.

The largest of the federal refuges on the San Joaquin River is the San Luis NWR, a mixture of managed seasonal and permanent wetlands, riparian habitat associated with the river and two tributary sloughs, and native grasslands, alkali sinks, and vernal pools. The 26,000-acre refuge, divided into six contiguous units on both the east and west sides of the river, is managed primarily to provide habitat for migratory and wintering birds (USFWS 2010b).

DFG administers several wildlife areas in the San Joaquin Valley near the San Joaquin River. Mendota Wildlife Area, located in Fresno County a few miles south of the river and the city of Mendota, consists of nearly 12,000 acres of managed impoundments and wetland and upland habitat, providing opportunities for bird-watching and waterfowl hunting. Three wildlife areas are located west of the San Joaquin River, in Merced County: the 6,000-

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acre Los Banos Wildlife Area, 2,800-acre Volta Wildlife Area, and 7,000-acre North Grasslands Wildlife Area. These wildlife areas provide opportunities for wildlife viewing, and for hunting, fishing, boating, and camping in designated areas; they receive 30,000–50,000 visits annually (Thomas Reid Associates 2001).

Major public uses within these federal refuges and State wildlife areas include interpretive wildlife observation programs, hunting (primarily for waterfowl), and self-led wildlife observation auto tour routes, and walking trails. Fishing is also permitted in some areas (USFWS 2010b; Thomas Reid Associates 2001).

Merced River to the Delta

Two Stanislaus County parks provide the only developed recreation access to the San Joaquin River between the Merced River confluence and the Delta. The Las Palmas Fishing Access, a few miles east of the town of Patterson, is a 3-acre park providing a concrete boat ramp and day-use facilities (Stanislaus County 2010a). Laird Park, 2 miles east of the town of Grayson, is a 97-acre “community park” (as designated by Stanislaus County) providing river access and day-use facilities (Stanislaus County 2010b).

The San Joaquin River NWR is located along the San Joaquin River between the Tuolumne and Stanislaus rivers, two major tributaries to the San Joaquin River. The refuge boundaries encompass more than 7,000 acres of riparian woodlands, wetlands, and grasslands. Although the refuge is primarily undeveloped, a wildlife viewing platform has been constructed at one location favored for viewing geese and other waterbirds (USFWS 2010c).

The West Hilmar Wildlife Area, on the west bank of the San Joaquin River a few miles downstream from the Merced River confluence, is a 340-acre State wildlife area with no facilities and accessible only by boat (DFG 2010g).

Mokelumne River Below Camanche Reservoir The lower Mokelumne River runs approximately 30 miles from the base of Camanche Dam to the Delta. EBMUD offers river visitors a day-use area at the base of Camanche Dam, which provides access to a nearly mile-long stretch of the river. The park has picnic sites and trails, and is used by rafters, kayakers, and other floaters to begin their runs downstream, as well as by anglers and swimmers (EBMUD 2010c). Cold water released from Camanche Dam supports the salmon and trout that migrate up the river from the Delta. Fishing season in the day-use area runs from January 1 to March 31 and from the fourth Saturday in May to October 15. Guided float trips are

available to anglers on this segment of the river (Costello 2010). About 4 miles downstream, San Joaquin County's Stillman McGee Regional Park provides access to the riverbank for anglers and a convenient take-out location for rafters and paddlers, as well as picnic sites (San Joaquin County 2010).

There are no public-access locations on the river between McGee Park and Lodi. However, the City of Lodi operates Lodi Lake Park on the river at the north edge of the city, with several picnic areas, a beach, a nature trail, and nonpowered boat access to the river. The city also operates a boathouse at the park, offering kayak rentals and lessons, and tours of the river via pontoon boat for small groups (City of Lodi 2010a, 2010b). A local outfitter also leads paddling outings on the river from Lodi Lake Park (San Joaquin Magazine 2009). A short distance downstream from the park, downstream boat passage is blocked by Woodbridge Diversion Dam, which backs up the river to form Lodi Lake. Just beyond the dam, San Joaquin County operates the Woodbridge Wilderness Area, a regional park with a natural riparian setting and one-quarter mile of Mokelumne River frontage (San Joaquin County 2010).

Calaveras River Below New Hogan Lake The Calaveras River flows 40 miles from New Hogan Lake to the Delta, passing through the city of Stockton before joining with the San Joaquin River. USACE releases flows of about 100–200 cfs to the river during summer (USACE 2010i). USACE operates the Monte Vista Recreation Area on the river just below New Hogan Dam as part of the New Hogan Recreation Area. The recreation area provides river access for anglers and hand-launching of boats. The river below the dam is known for its population of resident rainbow trout (Bacher 2008). When flows are high, anadromous fish (salmon and steelhead) can migrate from the Delta into the reach of the river below the dam (San Joaquin Basin 2010). The Monte Vista Recreation Area is also the trailhead for the "River of Skulls" hiking trail, a 1-mile loop trail that closely follows the river, and a staging area for an 8-mile equestrian trail that winds along the lake above the dam (USACE 2010f).

About 17 miles below New Hogan Dam, much of the river's flow is diverted by the Bellota Weir into the Mormon Slough Flood Control Channel. Remaining flows pass through the natural channel, which is now referred to as the Old Calaveras River. Flows in the natural channel are often very low or nonexistent, and there is no public access to the river along the remaining miles of its course to Stockton, although anglers have access to portions of Mormon Slough from the channel's levees (Bacher 2008). As it crosses through the urban area of Stockton, the natural river channel is rewatered, mainly by tidal flow from the Delta. The Calaveras

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River bike path follows the river for several miles within Stockton (City of Stockton 2010).

Stanislaus River Below Tulloch Reservoir Approximately 2 miles south of Tulloch Reservoir is Goodwin Dam, which marks the beginning of the lower Stanislaus River, the 58-mile reach of the Stanislaus River between the dam and the confluence with the San Joaquin River. River access is limited along the 4-mile stretch of river below Goodwin Dam and Knights Ferry, which flows through a scenic volcanic gorge; however, this segment is used by whitewater boaters (intermediate to expert level) and anglers. Public river access can be found just below Goodwin Dam, 2 miles downstream at Two Mile Bar, and at Knights Ferry (The Ecological Angler 2010; USACE 2010j), a historic gold mining-era town. Class I–II rafting (suitable for novice paddlers) is available below Knights Ferry, with floaters taking out at the Orange Blossom covered bridge 7 miles downstream, or at Oakdale 6 miles farther downstream (American Whitewater 2010a). Commercial guided rafting trips are offered on the runs downstream from Knights Ferry (River Journey 2010; Sunshine Rafting 2010).

In addition to the river access sites mentioned above, USACE operates several small riverside recreation areas between Knights Ferry and Oakdale and a free visitor center at Knights Ferry. These parks provide campsites, picnic areas, and hiking trails (USACE 2010j). Downstream from Oakdale, river access is limited to small USACE access sites adjacent to the communities of Riverbank and Myers, and a municipal park in the community of Ripon. A few miles upstream from the confluence with the San Joaquin River is Caswell Memorial State Park, a 258-acre park that offers activities such as camping, picnicking, swimming, fishing, tubing from the campground to the day-use area, bird-watching, and hiking (State Parks 2010g).

Tuolumne River Below Don Pedro Lake About 2 miles below Don Pedro Lake is La Grange Dam, which diverts a portion of the Tuolumne River flow released from the reservoir into canals for agricultural use. Below this diversion, the river flows past the small cities and towns of La Grange, Waterford, and Empire before flowing through the larger city of Modesto and then through the agricultural lands of the central San Joaquin Valley before joining with the San Joaquin River. Anglers can fish for coldwater and warmwater fish in the river, which also has a fall salmon run. The open season for trout and steelhead is from January 1 to October 15; the river is closed to salmon fishing (DFG 2010h). Restoration efforts are under way to improve conditions for salmon (Tuolumne River Trust 2010).

One mile downstream from La Grange Dam at La Grange Regional Park, operated by Stanislaus County, the Tuolumne River becomes accessible to boaters and anglers. The regional park extends along several miles of the river and provides carry-in boat access at the Old La Grange Bridge; about 2½ miles downstream at Basso Bridge, parking and an informal boat launch, gravel beach area, trails and pathways, and picnic sites are available (Stanislaus County 2010c). These are recommended put-ins for river paddlers seeking an easy and scenic river run (American Whitewater 2010b). Approximately 8.5 miles downstream from La Grange, the Turlock Lake SRA campground provides river access and 63 developed campsites (State Parks 2010h).

There are no developed recreation areas and river access is limited downstream from the Turlock Lake SRA until the river reaches Fox Grove Fishing Access, a 64-acre Stanislaus County park with 1 mile of river frontage, located about midway between the cities of Waterford and Modesto. The park provides parking, a boat ramp, a swimming area, and picnic sites (Stanislaus County 2010a). Where the river passes through the urban areas of Modesto and the neighboring city of Ceres, development is under way to enhance the five main riverside park areas that compose the Tuolumne River Regional Park. This park, a joint project of the Cities of Modesto and Ceres and Stanislaus County, consists of more than 500 acres of parkland that runs along 7 miles of the Tuolumne River (City of Modesto 2010). A short distance downstream, at the western edge of the urban area, Stanislaus County's Riverdale Park provides launching for nonmotorized or car-top boats. A few miles upstream from the confluence with the San Joaquin River, Stanislaus County's Shiloh Road Fishing Access provides river access to anglers (Stanislaus County 2010a).

The Basso Bridge and Shiloh Road facilities are closed from mid-October through December, during the salmon run. An effort is under way to establish the Lower Tuolumne River Parkway, which would enhance habitat and public-use opportunities at several potential sites on the river (Tuolumne River Trust 2010).

Merced River Below Lake McSwain Located immediately downstream from Lake McSwain is Merced Falls Reservoir, a small reservoir owned by Pacific Gas & Electric Company and created by Merced Falls Dam. Merced Falls Reservoir is operated in run-of-the-river mode, passing through the outflow from Lake McSwain. Approximately 3 miles downstream from Merced Falls Dam is Merced Irrigation District's Crocker-Huffman Diversion Dam, which diverts a portion of the river's flow into a canal for agricultural use. There are two minimally developed fishing accesses on the north side of the river upstream from Crocker-Huffman Diversion Dam and Merced Falls Dam (Merced County Events

2010). Carry-in access for nonpowered boats is available near a bridge crossing Merced Falls Reservoir. The 3.4-mile paddle between the two dams is an easy and scenic trip for beginning paddlers (American Whitewater 2010c).

Below Crocker-Huffman Diversion Dam, the river flows through agricultural lands, passing near only a few small communities. In this stretch of river there are four minimally developed fishing accesses on the north side of the river, in the first few miles below the dam (Merced County Events 2010). Two county parks and two State Park units also provide river access and recreational facilities. A short distance downstream from Crocker-Huffman Diversion Dam, Merced County provides river access and picnicking facilities at Henderson Park (Merced County 2010). Twenty-six miles downstream, McConnell SRA, operated by State Parks, is a 74-acre recreation area providing shady camping and picnic areas, sandy beaches, and fishing access (State Parks 2010i). Eleven miles farther downstream, Hagaman Park, operated by Merced County, provides picnic sites and river access (Merced County 2010). Lastly, George Hatfield SRA, located just above the confluence with the San Joaquin River and operated by State Parks, provides more than a mile of river frontage, camping and picnic sites, and a loop trail (State Parks 2010i).

Chowchilla River Below Eastman Lake Below Eastman Lake, the Chowchilla River provides water for agricultural users. Few if any apparent recreational uses are apparent and no recreational facilities are available on the river. Flows released from Eastman Reservoir are typically 100–300 cfs during summer (USACE 2010i), but most of this flow is diverted for agricultural use. Seven miles downstream from Eastman Lake, the Chowchilla River is diverted into both Berenda and Ash sloughs, with excess water continuing down the main river channel.

The last 2 miles of the river doubles as an irrigation canal for farms located along the riverbanks. The main river channel ends abruptly about 3 miles east of the San Joaquin River. (The river does not have a defined natural outlet to the San Joaquin because the river has only a seasonal flow, and natural water flow would normally dry up before it had a chance to reach the San Joaquin.) As part of the Lower San Joaquin River Flood Control Project, a diversion canal was built to connect the end of the riverbed with the Eastside Bypass, providing a controlled outlet to the San Joaquin River during years of heavy rains. The Chowchilla River also serves as the outlet of the Madera Canal, which receives water diverted from the San Joaquin River at Friant Dam.

The Chowchilla River downstream from the agricultural diversions (as well as Berenda and Ash sloughs) consists primarily of sandy washes that remain dry much of the year. The river is subject to substantial flows only for short time periods during winter storm events or in very wet winters. As a result, recreational use of the Chowchilla River is minimal to nonexistent.

Fresno River Below Hensley Lake Below Hidden Dam, which creates Hensley Lake, the Fresno River (like the nearby Chowchilla River) provides water for agricultural users; few if any recreational uses are apparent and no recreational facilities are available on the river. Summer outflow at Hidden Dam is generally 200–300 cfs (USACE 2010i), but this flow is diverted for agricultural use. The John Franchi Diversion Dam, about 12 miles downstream on the northeast edge of Madera, is used to divert water into the Madera Canal. The dam is operated by the Madera Irrigation District. From this point, the river is normally dry. Water is released past the diversion only when water levels are high enough to spill over the dam.

As the Fresno River channel continues its course west of Madera, the natural riverbed has been greatly modified and has several gaps, which are now connected by human-made canals. Eventually, the natural riverbed diverts most flows into a canal, which leads to the Eastside Bypass. The Fresno River downstream from the agricultural diversions consists primarily of sandy washes that remain dry much of the year, and the river is subject to substantial flows only for short time periods during winter storm events or in very wet winters. As a result, recreational use of the Fresno River is minimal to nonexistent.

Flood Bypasses

Sacramento Valley This section describes the recreation resources provided by the two major flood bypasses in the Sacramento Valley—the Sutter and Yolo bypasses—and by two smaller bypasses (Colusa and Tisdale) connecting the main bypasses to the Sacramento River. Much of the land within these bypasses and on their levees is managed by federal and State wildlife management agencies as wildlife refuges and wildlife areas. The bypasses are primarily dry most of the year, carrying flood flows only during winter and spring periods when Sacramento River flows are high enough to overtop the weirs at the head of the bypasses.

Hunting is permitted seasonally on the refuges and wildlife lands. When the bypasses are dry, designated areas are open for hunting upland game birds such as pheasant, quail, and mourning dove and small mammals such as rabbits. Deer are also hunted in some areas. When the bypasses are flooded, designated areas are open to waterfowl hunting. Fishing, bird-watching, and other types of wildlife viewing are also popular in these

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areas. The Yolo Bypass Wildlife Area, managed by DFG, is particularly well known for the large number of waterfowl of several species that congregate in the area during fall and winter (DFG 2010i). This wildlife area is easily accessible to the urban areas of Sacramento and Davis; in collaboration with the Yolo Basin Foundation, DFG offers extensive wildlife education programs to schoolchildren and the general public (DFG 2010j).

Table 3.18-4 lists the locations and recreational facilities of the five wildlife refuges and wildlife areas within the Sacramento River Basin flood bypasses (also see Figure 3.6-3 in Section 3.6, “Biological Resources—Terrestrial”).

Table 3.18-4. Locations and Recreational Facilities of Wildlife Refuges and Wildlife Areas on Sacramento River Flood Bypasses

Wildlife Refuge/Area	Managing Agency	Acres	Recreational Facilities	Location Information
Sutter National Wildlife Refuge	USFWS	2,591	Trails for wildlife viewing	Lands are between the levees of the Sutter Bypass.
Colusa Bypass Wildlife Area	DFG	1,248	None	Lands are within the Colusa Bypass, which is east of the Colusa Weir and passes flood flows eastward from the Sacramento River.
Sutter Bypass Wildlife Area	DFG	3,204	None	Lands are on the levees of the Sutter Bypass and within the Tisdale Bypass, which carries flood flows to the Sutter Bypass from the Sacramento River. The lands between the Sutter Bypass levees are within the Sutter National Wildlife Refuge, or are private croplands not open to the public.
Fremont Weir Wildlife Area	DFG	1,461	None	Lands are located at the entrance to the Yolo Bypass on the south side of the Sacramento River, just upstream from the confluence with the Feather River.
Sacramento Bypass Wildlife Area	DFG	360	None	Lands are adjacent to West Sacramento; the bypass links the Sacramento River and the Yolo Bypass.

Table 3.18-4. Locations and Recreational Facilities of Wildlife Refuges and Wildlife Areas on Sacramento River Flood Bypasses (contd.)

Wildlife Refuge/Area	Managing Agency	Acres	Recreational Facilities	Location Information
Yolo Bypass Wildlife Area	DFG	15,830	Trails/auto tour routes	Lands are primarily within the portion of the Yolo Bypass south of Interstate 80.

Sources: DFG 2010k, 2010l, 2010m, 2010n; USFWS 2010d

Key:

DFG = California Department of Fish and Game

USFWS = U.S. Fish and Wildlife Service

San Joaquin Valley This section describes the recreation resources provided by the major flood bypasses in the San Joaquin River Basin portion of the Extended SPA—the Chowchilla Canal and the Eastside and Mariposa bypasses. The bypasses are dry most of the year, carrying flood flows only during winter and spring periods when San Joaquin River flows are diverted into the Chowchilla Canal, and then routed to the Eastside and Mariposa bypasses.

Unlike the Sacramento River Basin bypasses, the lands within these bypasses are mainly in private hands and do not provide recreation opportunities to the general public. However, the Merced NWR sits astride a 5-mile segment of the Eastside Bypass, which forms the southern boundary of much of the refuge. This refuge encompasses more than 10,000 acres of wetlands, grasslands, and riparian areas and is known for hosting large populations of wintering sandhill cranes and various species of geese. The refuge also provides habitat for several species of waterfowl and numerous other birds during the breeding season. During the designated season, waterfowl hunting is permitted in two areas of the refuge that include portions of the Eastside Bypass channel and adjacent seasonal wetlands within the bypass levees. Another portion of the refuge provides an auto tour route popular with bird-watchers and other visitors (USFWS 2010e).

Land-Based Recreation Opportunities and Facilities The floor of the Sacramento and San Joaquin valleys and their foothills, like the broader watershed areas discussed above, include numerous federal, State, regional, and local lands and recreational facilities providing land-based recreation opportunities. Recreational facilities are less extensive than at higher elevations; however, the valley floor and foothills portion of the study area also includes federal lands—managed by USFS, BLM, and USFWS—that provide primarily dispersed recreation opportunities such as hiking, wildlife viewing, and hunting. As described above, these federal lands

often encompass large areas of undeveloped wildlands, but they may also provide developed facilities.

Delta and Suisun Marsh

Numerous recreation opportunities are available in the Delta. The Delta provides more than 630 miles of rivers and sloughs for boating and fishing (DBW 2003). Visitors have a choice of many private recreational facilities, primarily small marinas and resorts. Given these extensive waterways, and because most of the land in the Delta is used for agriculture, recreation in the Delta is focused primarily on water-based activities, particularly pleasure boating and fishing (from boats and from riverbanks and levees). Windsurfing is popular on the lower Sacramento River within the Delta.

More than 100 marinas and marina resorts operate within and on the margins of the Delta. These range from small facilities with fewer than 50 long-term berths to large facilities with more than 500 berths and additional amenities such as boat ramps, RV campgrounds, cabins, restaurants and bars, convenience stores, and picnic areas. Numerous yacht clubs are based at commercial marinas in the Delta, and more than 20 yacht clubs operate Delta facilities for their members that are separate from marinas (DPC 1997).

Publicly owned facilities in the Delta comprise several large city-operated marinas situated on Delta waterways; several county parks that offer boat ramps, fishing access, camping, and picnic sites; and two State Park units (DPC 1997). Brannan Island SRA, in the central Delta on the Sacramento River and Threemile Slough, offers a multilane boat ramp, numerous campsites, a swim beach, and day-use facilities. Franks Tract SRA consists of a large flooded island that was formerly farmland, surrounded by remnant levees; there are no developed facilities in this SRA (State Parks 2010j).

In the Delta, wildlife refuges, wildlife areas, and nature preserves are also used for recreation. Stone Lakes NWR, situated on the eastern edge of the Delta, offers wildlife-dependent recreation such as waterfowl hunting and wildlife viewing. The Cosumnes River Preserve is also situated on the east edge of the Delta, offering a visitor center, trails, and wildlife viewing opportunities. Lower Sherman Island Wildlife Area, located at the confluence of the Sacramento and San Joaquin rivers, consists of more than 3,000 acres of open water, marshland, and remnant islands; this wildlife area is accessible only by boat (DFG 2010o). Several additional small State wildlife areas, operated by DFG and accessible only by boat, are located on islands within Delta waterways. Yolo Bypass Wildlife Area (discussed above, in relation to Sacramento River flood bypasses) occupies a large portion of the north Delta to the west of the Sacramento River. The portion

of the Yolo Bypass downstream from the wildlife area hosts more than 20 private hunting clubs (DPC 1997).

Sacramento and San Joaquin Valley Watersheds

Reservoirs and Streams Providing Water-Based or Water-Enhanced Recreation

Lake Berryessa and Putah Creek Downstream from Lake Berryessa Lake Berryessa, created by Monticello Dam on Putah Creek, is operated by Reclamation and covers 20,700 acres at full pool (DWR 2010b). The lake is 23 miles long and 3 miles wide, with 165 miles of shoreline.

Reclamation provides two large day-use areas, a boat ramp, and many smaller dispersed day-use areas. The seven resorts around the lake are managed by concessionaires under contract with Reclamation and provide camping, day use, and boating facilities. The lake provides both a coldwater and warmwater fishery. Reclamation and DFG jointly manage a 2,000-acre wildlife area along the east side of the lake (Reclamation 2010b). Bird-watching and wildlife viewing are excellent in the wildlife area, which is accessed primarily by boat, but hunting is not allowed (DFG 2010p).

Downstream from Lake Berryessa, the 6-mile reach of Putah Creek between Monticello Dam and Putah Diversion Dam is well known for trout fishing. Both wild and hatchery-reared rainbow trout can be caught in the creek. On the north side of the creek in this reach, five fishing access sites owned by DFG and managed by the Yolo County Parks and Resources Department are available to anglers (EDAW 2005). Putah Diversion Dam diverts water into the Putah South Canal, about 6 miles downstream from Monticello Dam. The dam creates a narrow 1.5-mile pool named Lake Solano. A county park on the south side of the pool provides campsites, picnic areas, a playground, paddleboat rentals, a fishing pond managed by DFG, fishing access to the lake, and hiking trails (Solano County 2010).

Below Putah Diversion Dam, Putah Creek flows through a levee-controlled channel past Winters, before most flow enters the artificial south fork of the creek, south of Davis, which terminates in the Yolo Bypass. The City of Winters provides a community park on the creek. The only public-access site on the creek between Davis and Winters is at Stevenson's Bridge, within the Putah Creek Riparian Reserve. The University of California, Davis (UC Davis) manages two natural reserves that are open to the public: Stebbins Cold Canyon Reserve, just below Lake Berryessa, and Putah Creek Riparian Reserve, close to the UC Davis campus. Most of the northern levee of Putah Creek is open to the public for walking, running, bird watching, or bicycling. Closer to the creek, trails within the Putah

Creek Riparian Reserve are used by hikers, walkers, birders, and joggers (EDAW 2005).

San Luis Reservoir San Luis Reservoir is located on the western edge of the San Joaquin Valley, in Merced County. State Parks provides camping, boating, and day-use facilities in the San Luis Reservoir SRA, which surrounds much of the 12,700-acre reservoir and adjacent O’Neill Forebay (State Parks 2010e). Pacheco SP, located on the west side of San Luis Reservoir, is primarily undeveloped but provides 28 miles of hiking, equestrian, and biking trails on several thousand acres of foothill lands (State Parks 2010k). The San Luis Reservoir and Cottonwood Creek wildlife areas and the O’Neill Forebay Wildlife Area are located on the north shorelines of San Luis Reservoir and O’Neill Forebay, respectively. These areas, managed by DFG, encompass nearly 8,000 acres that support opportunities for wildlife and wildflower viewing, and hunting (DFG 2010q, 2010r, 2010s).

Land-Based Recreational Facilities and Opportunities The watersheds of the Sacramento and San Joaquin valleys include numerous federal, State, regional, and local lands and recreational facilities providing land-based recreation opportunities. These include federal lands providing primarily dispersed recreation opportunities, such as hiking, camping, and hunting and managed by USFS, BLM, USFWS, and USACE. These federal lands often encompass large areas of undeveloped wildlands, but may also provide developed campgrounds, picnic areas, and trails. The watershed also includes State lands managed by State Parks as State parks, SRAs, State vehicular recreation areas, State historic parks, or other types of designated State Park units. These lands often contain a range of developed recreational facilities such as campgrounds, picnic areas, visitor centers, boat ramps, and trails. State lands within the Sacramento and San Joaquin Valley watersheds also include areas managed by DFG as State wildlife areas, which are managed to provide wildlife-based recreation opportunities such as wildlife viewing, bird-watching, and hunting, typically with few developed facilities. Lastly, regional and local agencies within the Sacramento and San Joaquin Valley such as counties, cities, park and recreation districts, school districts, and water districts provide a range of city neighborhood and community parks and other types of developed and often urban or sports-oriented recreational facilities.

SoCal/Coastal CVP/SWP Service Areas

In general, the SoCal/coastal CVP/SWP service areas cover several large, noncontiguous portions of California between the cities of Napa and San Diego. As stated previously, because the proposed program is expected to have little to no impact on recreation within the SoCal/coastal CVP/SWP

service areas, recreation resources in these service areas are not discussed in detail.

In northern California, the service areas include the cities of Napa, Fairfield, Vacaville, and San Jose, along with a large area around San Jose and south of the city along U.S. Highway 101. In the Central Valley, the service areas cover an area along and mostly east of I-5 from Tracy to Bakersfield. On the coast, the service areas include the San Luis Obispo and Santa Barbara areas. In Southern California, the service areas include the greater Los Angeles, San Bernardino, and San Diego areas, along with most of the areas between these three cities. The service areas also include an area around the northern part of the Salton Sea, in the greater Palm Springs area.

Because the SoCal/coastal CVP/SWP service areas cover such a large part of Southern California and parts of the Central Valley and San Francisco Bay Area, a wide range of recreation lands and facilities is available in the service areas: State wildlife areas and ecological preserves, State parks and State beaches, lands within national forests, a national recreation area, and many regional, county, and local recreation sites. Recreation opportunities available in the service areas are commensurately plentiful and include activities such as wildlife viewing, bird-watching, hiking, biking, hunting, fishing, a variety of boating and water-related activities (on reservoirs, natural lakes, and rivers), horseback riding, picnicking, camping, sports activities, and sightseeing at museums, historic sites, and other locations.

3.18.2 Regulatory Setting

The following text summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program's impacts on recreation.

Federal

As discussed above, nine federally owned and operated multipurpose reservoirs operate in the Sacramento and San Joaquin River basins (i.e., within the Sacramento and San Joaquin Valley and foothills portion of the study area). For each of these reservoirs, the agency that owns or manages recreation at the reservoir has developed a master plan, resource management plan, or forest plan guiding recreation development, management, and use. At three of the reservoirs that are operated by Reclamation but surrounded by SRAs (Folsom and Millerton lakes and Los Banos Creek Reservoir), the relevant plans are joint State/federal documents. Two of the reservoirs owned by local water districts are also addressed in federal plans, because those reservoirs occupy mostly federal land. Table 3.18-5 lists the relevant federal plans and other regulatory documents that address each reservoir.

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Table 3.18-5. Management Plans and Related Documents for Federal Reservoirs in the Sacramento and San Joaquin River Basins

Reservoir	Owner¹	Plan or Other Document
Federally Owned and Operated Reservoirs		
Black Butte	USACE	<i>Black Butte Lake Master Plan (1977)</i>
Eastman	USACE	<i>Eastman Lake Master Plan</i>
Folsom	Reclamation	<i>Folsom Lake State Recreation Area & Folsom Powerhouse State Historic Park Preliminary General Plan and Resource Management Plan (2007)</i>
Hensley	USACE	<i>Hensley Lake Master Plan</i>
Los Banos Creek	Reclamation	<i>San Luis State Recreation Area Resource Management Plan/Preliminary General Plan (2005)</i>
Millerton	Reclamation	<i>Millerton State Recreation Area Resource Management Plan/General Plan (2008)</i>
New Hogan	USACE	<i>New Hogan Lake Master Plan (1976)</i>
New Melones	Reclamation	<i>New Melones Lake Area Resource Management Plan (2010)</i>
Shasta	USFS ²	<i>Shasta-Trinity National Forest Land and Resource Management Plan (1995)</i> <i>Shasta-Trinity National Recreation Area Management Guide (1996)</i>
Locally Owned and Operated Reservoirs Addressed by Federal Plans		
New Bullards Bar	YCWA/ USFS ³	<i>Plumas National Forest Land and Resource Management Plan (1988)</i> <i>Tahoe National Forest Land and Resource Management Plan (1990)</i>
Indian Valley	YCFCWCD ⁴	<i>Ukiah Resource Management Plan (2006)</i>

Source: Data compiled by AECOM in 2011

Notes:

¹ Except where noted, the agencies listed both own and operate the reservoirs listed and are fully responsible for managing reservoir recreation.

² At Shasta Lake, the lake surface and surrounding lands are administered by USFS, except lands needed to operate the Central Valley Project area in the immediate vicinity of the dam, which are retained by Reclamation. Reclamation also controls operation of Shasta Dam and reservoir pool levels.

³ New Bullards Bar Reservoir is operated by YCWA but straddles the Tahoe and Plumas national forests, administered by USFS. Thus, recreation management responsibilities for the reservoir are shared by YCWA and Tahoe and Plumas national forests.

⁴ Indian Valley Reservoir is owned and operated by YCFCWCD, but is located on State and federal lands. The reservoir is at the center of the U.S. Bureau of Land Management's Indian Valley Management Area, managed by the Ukiah Field Office.

Key:

LRMP = Land and Resource Management Plan

NRA = National Recreation Area

Reclamation = U.S. Department of the Interior, Bureau of Reclamation

RMP = Resource Management Plan

SRA = State Recreation Area

USACE = U.S. Army Corps of Engineers

USFS = U.S. Forest Service

YCFCWCD = Yolo County Flood Control and Water Conservation District

YCWA = Yuba County Water Agency

U.S. Army Corps of Engineers (Black Butte, Eastman, and Hensley Lakes and New Hogan Reservoir) Master plans have been prepared by USACE for Black Butte Lake, Eastman Lake, Hensley Lake, and New Hogan Reservoir (USACE 1976). The *New Hogan Lake Master Plan* is currently being updated (USACE 2010k). These master plans set forth policies, objectives, and programs for project development and use and promote the protection, conservation, and enhancement of natural, cultural, and human-made resources. The master plans are the basic documents that guide USACE in meeting the responsibilities it assumed under federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources (USACE 1996).

U.S. Department of the Interior, Bureau of Reclamation (Folsom, Millerton, and New Melones Lakes and Los Banos Creek Reservoir) The Reclamation Recreation Management Act of 1992 (Public Law 102-575, Title 28, Section 2805(s)(1)(A)) directs Reclamation to “provide for the development, use, conservation, enhancement, and management of resources on Reclamation lands.” In response to this law, Reclamation has developed several management plans addressing recreation and other resources.

Reclamation has recently updated the resource management plan (RMP) for New Melones Lake. The RMP establishes a conceptual plan detailing the management framework for the conservation, protection, enhancement, development, and use of the physical and biological resources in the New Melones Lake area. More specifically, the RMP provides for recreation management/development activities that are intended to ensure the continued quality of facilities and opportunities and be compatible with other environmental resources, and that are based on expressed public need (Reclamation 2010c).

Reclamation has entered into agreements with State Parks to develop, administer, and maintain the public lands around Folsom and Millerton lakes and Los Banos Creek Reservoir as part of the California State Parks system (i.e., Folsom and Millerton SRAs and part of San Luis SRA). Management of each of these reservoirs is guided by a joint RMP and general plan, developed cooperatively by Reclamation and State Parks with the primary purpose of managing each area consistently and as one entity, under both federal and State guidelines. The RMP (federal) and general plan (State) are both long-term planning documents designed to guide future management actions. Each of these plans has a planning horizon of approximately 20–25 years.

The joint plans establish management objectives, guidelines, and actions to meet the following goals: (a) protect the reservoirs’ water supply and water

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quality functions; (b) protect and enhance natural and cultural resources in the SRAs, consistent with federal law and Reclamation policies; and (c) provide recreational opportunities and facilities consistent with CVP purposes and State Parks and Reclamation policies. Management guidelines are followed and actions implemented by Reclamation either directly or through its recreation contract with State Parks.

In addition, the general plans are the primary management guidelines for defining a framework for resource stewardship, interpretation, facilities, visitor use, and services. General plans define an ultimate purpose, vision, and intent for management through goal statements, guidelines, and broad objectives. However, they stop short of defining specific objectives, methodologies, and designs for how to accomplish these goals.

The final RMP and general plan for Millerton Lake SRA was completed in April 2010 (Reclamation and State Parks 2010). The preliminary general plan/RMP for Folsom Lake SRA (and the adjoining Folsom Powerhouse State Historic Park) was completed in November 2007 (Reclamation and State Parks 2007). (The California State Park and Recreation Commission approved the general plan in October 2009. Reclamation will make a decision regarding the approval of the RMP and final environmental impact statement separately (State Parks 2011).) The San Luis Reservoir SRA RMP/preliminary general plan was completed in April 2005 (Reclamation and State Parks 2005). Each of the RMP/general plans also serve as a programmatic environmental impact statement/environmental impact report.

U.S. Forest Service (Shasta Lake and New Bullards Bar Reservoir) At Shasta Lake, the lake surface and surrounding lands are administered by USFS, except the lands needed to operate the CVP area in the immediate vicinity of the dam, which have been retained by Reclamation. Reclamation also controls operation of Shasta Dam and reservoir pool levels. Shasta Lake and the surrounding federal lands compose the Shasta Unit of the Shasta-Trinity National Recreation Area (STNRA), established by Congress in November 1965 to provide for public outdoor recreation use and enjoyment, among other purposes. The Shasta Unit is within the Shasta-Trinity National Forest. The act establishing the STNRA specified that it was to be administered in a manner coordinated with other purposes of the CVP.

USFS manages recreation within the STNRA's Shasta Unit under the authority of a 1987 master interagency agreement between Reclamation and USFS. Administration of the Shasta Unit is coordinated with the administration and purposes of the CVP through a memorandum of agreement between Reclamation and USFS established December 31,

1986. Management of Shasta Lake is guided by the 1995 *Shasta-Trinity National Forest Land and Resource Management Plan* (Shasta-Trinity LRMP) and the 1996 *Shasta-Trinity NRA Management Guide*.

The Shasta-Trinity LRMP (USFS 1995) guides management of Shasta-Trinity National Forest with the goals of integrating a mixture of management activities that protect forest resources and allow use, fulfill guiding legislation, and address local, regional, and national issues. The Shasta Unit is managed according to the current NRA management plan, which is incorporated as part of the Shasta-Trinity LRMP and is updated periodically. The Shasta-Trinity LRMP provides relevant recreation-related standards and guidelines to ensure that road, trail, and facility development and management activities are consistent with a Roaded Natural setting.

The *Shasta-Trinity National Recreation Area Management Guide* (USFS 1996) integrates management of Shasta-Trinity NRA with, and implements the direction in, the Shasta-Trinity LRMP. The guide addresses key concerns related to recreation and other resource management issues, such as the types and amounts of commercial and USFS recreational facilities to be provided. It also describes desired future conditions for Shasta Lake. The guide then offers detailed recommendations for implementing the Shasta-Trinity LRMP and achieving desired future conditions, both for lake- and land-based recreation and for commercial recreation operations in the Shasta-Trinity NRA.

New Bullards Bar Reservoir is operated by Yuba County Water Agency (YCWA) but abuts both Tahoe and Plumas national forests, administered by USFS. Thus, recreation management responsibilities for the reservoir are shared by YCWA and Tahoe and Plumas national forests. *The Tahoe National Forest Land and Resource Management Plan* (Tahoe National Forest LRMP) (USFS 1990) addresses recreation management at the new Bullards Bar Reservoir, the eastern half of which is within the Bullards Management Area. The management-area direction within the Tahoe National Forest LRMP emphasizes maintaining and improving recreation sites around the reservoir, among other emphases. The *Plumas National Forest Land and Resource Management Plan* (USFS 1988) also addresses New Bullards Bar Reservoir, the western half of which is within the Challenge Management Area. However, this plan states that USFS will rely on Tahoe National Forest to administer the reservoir and its shoreline.

U.S. Bureau of Land Management (Indian Valley Reservoir, Sacramento River Corridor) Indian Valley Reservoir is owned and operated by YCFCWCD, but is located on State and federal lands. The reservoir is at the center of the BLM Indian Valley Management Area, managed by the Ukiah Field Office. The *Ukiah Resource Management*

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Plan (BLM 2006) provides management guidance for recreation common to all areas within the field office's jurisdiction, as well as management zoning and associated allowable uses specific to the Indian Valley Management Area. BLM recreation management for the essentially undeveloped federal lands surrounding the reservoir focuses on providing trails and trailhead facilities, as well as a primitive hike-in camp. The jurisdictions of State and local government agencies and their regulations relevant to Indian Valley Reservoir are discussed in the "State" and "Regional and Local" sections below.

BLM administers most of the public lands along the Sacramento River between Shasta Dam and Keswick Dam, and additional lands between Keswick Dam and the city of Redding, as part of the Interlakes Special Recreation Management Area (SRMA), which is part of the Shasta Management Area. BLM also administers more than 17,000 acres of public lands on both sides of the river within the Sacramento River Management Area, which extends from just downstream from Redding farther downstream to the Tehama County/Glenn County boundary, about 25 miles south of Red Bluff. Most of the BLM lands are concentrated above Red Bluff, between Jellys Ferry and Iron Canyon. A few hundred additional acres of BLM lands are at two island parcels downstream from Red Bluff. The proposed RMP for the Redding Resource Area identifies proposed management direction for these BLM-administered public lands (BLM 1992).

The 25 miles of the Sacramento River between Balls Ferry and Iron Canyon have been determined to be eligible for inclusion in the federal Wild and Scenic Rivers system, with recreational, scenic, and wild classifications for various segments. All public land within one-quarter mile of normal high water are managed to protect the outstandingly remarkable values and free-flowing character that led to their determination of eligibility. The RMP was followed by a plan for the Interlakes SRMA, which refined recreation actions for the Keswick Reservoir area of the Sacramento River corridor (among other areas of the SRMA) (BLM 1997).

U.S. Coast Guard Title 14, Title 33, and other portions of the Code of Federal Regulations (CFR) authorize the U.S. Coast Guard to conduct maritime law enforcement on the navigable waters of the United States. The Coast Guard is also responsible for conducting search-and-rescue operations, protecting the marine environment, and maintaining river aids to navigation, including recreational navigation. Specific to the Delta, the Inland Waterways Navigation Regulations (33 CFR 162) govern navigation by both commercial and noncommercial vessels on the San Joaquin River Deep Water Channel (between Suisun Bay and Stockton) and the

Sacramento Deep Water Ship Channel (between Suisun Bay and West Sacramento).

State

California Department of Water Resources (Lake Oroville) DWR-owned Lake Oroville is the centerpiece of the Feather River Project, regulated by the Federal Energy Regulatory Commission (FERC), which issues licenses to nonfederal agencies for the operation of hydropower projects. FERC requires licensees to provide for reasonable recreation access and development, consistent with the primary purposes of the project, and to develop a recreation plan. A multiyear relicensing process for the Feather River Project (FERC Project No. 2100), of which Lake Oroville is a major component, concluded in a settlement agreement in 2006. DWR is currently awaiting issuance of a new license by FERC. Lake Oroville and the surrounding lands compose the majority of the Lake Oroville State Recreation Area (LOSRA), operated by State Parks. Several existing plans address recreation at Lake Oroville (Table 3.18-6).

Table 3.18-6. Management Plans and Other Related Documents for State and Local Reservoirs in the Sacramento and San Joaquin River Basins

Reservoir	Owner	FERC Project	Current Plans and Other Regulatory Documents
State-Owned and Operated Reservoir			
Oroville	DWR	Feather River Project (No. 2100)	<i>Proposed Amended Recreation Plan for Lake Oroville State Recreation Area (1993)</i> <i>Lake Oroville State Recreation Area Resource Management and General Development Plan (1973)</i> <i>Draft Settlement Agreement Recreation Management Plan (2006)¹</i> <i>Draft Lake Oroville State Recreation Area General Plan (2004)²</i>
Locally Owned and Operated Reservoirs			
New Bullards Bar	YCWA	Yuba River Project (No. 2246)	<i>Revised Recreation Plan (1993)</i> Yuba County Ordinances No. 435, 541, 534, 1082, and 1315 (no date): multiple regulations ³
Camanche and Pardee	EBMUD	Lower Mokelumne River Project (No. 2916)	<i>Amended Proposed Recreation Plan (1993)</i> <i>Mokelumne Watershed Master Plan (2008)</i>
Don Pedro	MID and TID	Don Pedro Project (No. 2299)	<i>Don Pedro Recreation Agency Rules and Regulations, as amended (2010)</i>

Table 3.18-6. Management Plans and Other Related Documents for State and Local Reservoirs in the Sacramento and San Joaquin River Basins (contd.)

Reservoir	Owner	FERC Project	Current Plans and Other Regulatory Documents
Indian Valley	YCFCWCD	NA	Lake County Ordinance No. 1068: established 5- to 10-mph speed limit (depending on area of the reservoir) (1979) ⁴
McClure and McSwain	MID	Merced River Project (No. 2179)	<i>Recreation Use Plan</i> (1992) ⁵ Mariposa County Ordinances 502 (1979), 599 (1983), and 747 (1989): multiple regulations ⁶
Tulloch	OID and SSJID	Tri-Dam Project (No. 2067)	<i>Tulloch Reservoir Shoreline Management Plan</i> (2007) ⁷

Source: Data compiled by AECOM in 2011

Notes:

- ¹ DWR plan to be implemented at issuance of a new license by FERC.
- ² State Parks general plan to be finalized in parallel with DWR recreation management plan.
- ³ Ordinances contained in Title VIII, "Public Peace and Safety," Chapter 8.50, "Bullards Bar Recreation Area."
- ⁴ Ordinance contained in Chapter 15, "Recreation," Article I, "Boats and Boating," Section 15-5, "Restricted Areas."
- ⁵ A new recreation plan will be developed as part of ongoing project relicensing.
- ⁶ Ordinances contained in Title 12, Chapter 12.16, "Public Use of Lake McClure and Lake McSwain Recreation Areas."
- ⁷ Replaces the recreation plan that is normally required by FERC, because the shoreline is primarily private land.

Key:

- DWR = California Department of Water Resources
- EBMUD = East Bay Municipal Utility District
- FERC = Federal Energy Regulatory Commission
- LOSRA = Lake Oroville State Recreation Area
- MID = Modesto Irrigation District
- NA = not applicable
- OID = Oakdale Irrigation District
- SSJID = South San Joaquin Irrigation District
- State Parks = California Department of Parks and Recreation
- TID = Turlock Irrigation District
- YCWA = Yuba County Water Agency
- YCFCWCD = Flood Control and Water Conservation District

The relevant plan currently in effect for Lake Oroville is the FERC-approved *Proposed Amended Recreation Plan for the Oroville Facilities, FERC Project No. 2100* (DWR 1993). That recreation plan put forth recommendations for facility expansion and modification, all of which have since been implemented (DWR 2003). As part of FERC's relicensing requirements, the licensee must state in its license application how it intends to create, preserve, or enhance recreation opportunities at the project site and in its vicinity (18 CFR 4.51). To meet this requirement, DWR prepared the *Settlement Agreement Recreation Management Plan* in 2006 as an amended component of the license application it submitted to FERC in 2005. This plan provides a vision of the desired future conditions for recreation resources in the project area, establishes long-term goals and

objectives, and identifies recreation measures to be implemented over the term of the anticipated new license (DWR 2006). The recreation opportunities at Lake Oroville will be enhanced and expanded through implementation of the plan, which involves upgrading existing facilities, constructing new facilities, and monitoring recreation use.

California Department of Parks and Recreation State Parks manages the State park and recreation areas within the study area under Title 14 of the California Code of Regulations and the California Public Resources Code. Specific management direction and guidance is provided by the general plans for individual parks.

Concurrent with the FERC Project No. 2100 relicensing process described above, State Parks began developing an update to the *Lake Oroville State Recreation Area General Plan*, which would serve as a long-range management tool for LOSRA and provide input to DWR's relicensing process and recreation management plan. The public review draft of the *Lake Oroville State Recreation Area General Plan* was released in November 2004 (State Parks 2004). Presumably, this general plan will be finalized concurrently with the recreation management plan for Project No. 2100, after the new license is issued. Until then, State Parks's existing general plan, adopted in 1973 and subsequently amended, continues to apply.

California Department of Fish and Game DFG manages ecological reserves and wildlife areas in the study area under Title 14 of the California Code of Regulations and the California Fish and Game Code. The regulations provide for various types of public uses in the wildlife areas. However, protection and enhancement of fish and wildlife habitat is the primary management purpose of the wildlife areas; recreation and public use is secondary to habitat preservation. Ecological reserves are established to protect rare, threatened, or endangered plants and wildlife and special habitat types; public entry may be restricted to protect wildlife or habitat.

DFG-administered wildlife areas on the Sacramento and San Joaquin rivers and adjacent to some reservoirs in the study area are designated by the California Fish and Game Code as "Type C" areas, which generally have no or minimal developed facilities. Hunters are not required to have a permit or a pass (other than a valid California hunting license and any required stamps) to use most Type C areas. General regulations for Type C areas apply to all wildlife areas in the study area; special regulations for each area may prohibit camping and establish other restrictions on hunting and other uses (DFG 2010t).

DFG interacts with other management agencies to ensure that hunting and fishing regulations are enforced on both public and private lands, and maintains authority over activities that could affect wildlife or wildlife habitat. DFG also administers the waterfowl hunting program on several federal wildlife refuges, including the Sacramento River NWR.

Delta Protection Act and Land and Resource Management Plan for the Primary Zone of the Delta The Delta Protection Act of 1992 (California Public Resources Code, Section 29700 et seq.) established the Delta Protection Commission (DPC) and required preparation of the *Land and Resource Management Plan for the Primary Zone of the Delta* (Delta LRMP). The Delta Protection Act includes the following sections related to recreation:

- *Section 29702* indicates that the State's basic goals for the Delta are to protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment, including agriculture, wildlife habitat, and recreational activities.
- *Section 29705* states that the Delta's wildlife and wildlife habitats are valuable, unique, and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations.
- *Section 29710* declares that agricultural, recreational, and other uses of the Delta can best be protected by implementing projects that protect wildlife habitat before conflicts arise.
- *Section 29712* acknowledges that the Delta's waterways and marinas offer recreational opportunities of statewide and local significance and are a source of economic benefit to the region, and because of increased demand and usage, public safety requirements will increase.

The Delta LRMP, which was originally adopted by DPC in 1995, provides guidance to State agencies undertaking activities in the Primary Zone of the Delta. In February 2010, DPC adopted an updated Delta LRMP that contains a revised and expanded list of recreation policies promoting recreation goals similar to those set forth in the 1995 plan; however, the updated plan contains no new recreation recommendations. The recreation and access section of the Delta LRMP includes several recreation policies intended to encourage development of recreational facilities and improvements in recreation access and safety, while minimizing effects on other resources (DPC 2010).

Boating Laws California boating laws are contained in the California Harbors and Navigation Code, Vehicle Code, and Penal Code and the California Code of Regulations, among other statutes. California boating laws and regulations apply uniformly on all waters of the State. California law does not replace the regulations of the U.S. Coast Guard and other federal regulations in force on federally navigable waters, but is in general conformity with these laws (DBW 2010). In California, boating laws are enforced at the local level, by agencies such as the county sheriff's department and municipal marine patrol units. A program conducted by the California Department of Boating and Waterways (DBW) funds local law enforcement agencies and trains their personnel to adequately enforce boating law and ensure that California boating laws are enforced uniformly statewide (DBW 2007).

Regional and Local

Most of the locally owned reservoirs within the study area are hydropower projects regulated by FERC (Table 3.18-6). As a result, the primary recreation plan document for each reservoir is the FERC-required and approved recreation plan. All of these reservoirs are operated by water agencies that serve municipal and agricultural water supply needs.

Yuba County Water Agency (New Bullards Bar Reservoir) New Bullards Bar Reservoir is part of the Yuba River Project (FERC Project No. 2246), operated by YCWA. Recreation at New Bullards Bar Reservoir is guided by the *Revised Recreation Plan*, approved by FERC in 1993 (YCWA 1993). The plan analyzes recreation uses and capacities at the lake, and makes proposals for management and development of recreational facilities. Road and parking improvements and a boat ramp extension have been completed in recent years, in coordination with USFS and as directed by this plan. The Yuba River Project is currently engaged in relicensing, with the application for a new license due in 2014. This process will result in updated plans for recreation at New Bullards Bar Reservoir.

East Bay Municipal Utility District (Camanche and Pardee Reservoirs) Camanche and Pardee Reservoirs, operated by EBMUD, are both features of the Lower Mokelumne River Project (FERC Project No. 2916). EBMUD maintains and operates three recreation areas and manages recreation use on the two reservoirs in accordance with the *Amended Proposed Recreation Plan* filed with FERC in 1993 and approved by FERC in 1997 (EBMUD 2009).

EBMUD also prepared the *Mokelumne Watershed Master Plan*, which provides long-term policies and guidance for future use and management of the lands and waters owned by EBMUD within the Mokelumne River

watershed. A guiding principle of this master plan was to anticipate regional growth and recreational demand and the develop guidelines to respond to that growth; the plan identifies shoreline lands designated for future recreation area development (EBMUD 2008).

Modesto Irrigation District and Turlock Irrigation District (Don Pedro Lake, Lake McClure) Don Pedro Lake, the centerpiece of the Don Pedro Project (FERC Project No. 2299), is operated jointly by Modesto Irrigation District (MID) and Turlock Irrigation District (TID). Recreation at Don Pedro Lake is regulated by the Don Pedro Recreation Agency Rules and Regulations, adopted in 1999 and last amended in 2010 (Don Pedro Recreation Agency 2010b). Like the Yuba River Project, the Don Pedro Project is currently engaged in relicensing, with the application for a new license due in 2014 (MID and TID 2011). This process will result in updated plans for recreation at Don Pedro Lake; to date, however, FERC has not required a formal recreation plan for Don Pedro Lake (Devine, pers. comm., 2011).

Lake McClure, operated by MID, is a feature of the Merced River Project (FERC Project No. 2179). MID maintains and operates the four recreation areas on Lake McClure (and the one developed recreation area on Lake McSwain, the small regulating reservoir downstream) in accordance with an *Amended Recreation Plan* approved by FERC in 1992 (MID 2005). Like the Yuba River and Don Pedro projects, the Merced River Project is currently engaged in relicensing, with the application for a new license due in 2012 (MID 2008). This process will result in updated plans for recreation at Lake McClure (and Lake McSwain). Several Mariposa County ordinances establish regulations for vehicle use, lake use, and camping and picnicking at the reservoirs (see portions of Title 12, Chapter 12.16 of the Mariposa County Code of Ordinances, regarding public use of Lake McClure and Lake McSwain recreation areas).

Yolo County Flood Control and Water Conservation District (Indian Valley Reservoir) Indian Valley Reservoir is not a hydropower project, and thus is not licensed or regulated by FERC. YCFCWCD owns the land near the dam and provides primitive camping, a boat ramp, and a small concession-operated store and marina at that location, under the authority of the YCFCWCD Board of Directors. However, the primary regulation controlling recreation activity on the reservoir is a Lake County ordinance that prohibits operation of motorized boats in excess of 10 mph on any part of Indian Valley Reservoir and in excess of 5 mph in portions of the reservoir (this county ordinance is discussed in more detail below under “Counties and Cities”). As discussed above in discussions of the federal and State regulatory setting, BLM and DFG own and collaboratively administer the majority of shoreline lands around Indian Valley Reservoir.

Oakdale and South San Joaquin Irrigation Districts (Tulloch Reservoir) Tulloch Reservoir, cooperatively operated by Oakdale and South San Joaquin irrigation districts as a component of the Tri-Dam Project (FERC Project No. 2067), is located mostly on private land. These private lands, which include one of the two recreation developments on the lake, are managed according to the general plans of Calaveras and Tuolumne counties. The other recreation development is on State land leased to Tuolumne County, which leases the land to a marina and campground concessionaire. A new license for the project was issued by FERC in 2006, with a requirement for an updated *Tulloch Reservoir Shoreline Management Plan* (SMP). The SMP, completed in 2007, provides a comprehensive policy for managing the reservoir's shoreline and water surface (SSJID and OID 2007). The plan contains criteria for development of commercial and private recreational facilities.

Counties and Cities The counties in the study area have developed general plans that address recreation, commonly within an open space and recreation element or some equivalent. These elements set forth goals and policies intended to preserve open space and provide outdoor recreation opportunities at the countywide level. They may also include elements that focus on community-level recreation services and facilities. Examples of such plans include the Open Space and Recreation Element of the *Shasta County General Plan* (Shasta County 2004) and the Open Space and Conservation Element of the *Tehama County General Plan* (Tehama County 2009).

Some counties in the study area have enacted ordinances that are intended to guide and control recreation activity at reservoirs. An example is the Yuba County Code of Ordinances, which contains several regulations pertaining to recreation at New Bullards Bar Reservoir. These regulations, included in Title VII, Chapter 8.50 (Ordinances No. 435, 541, 534, 1082, and 1315), specify which vehicle uses and camping, swimming, fishing, and boating behaviors and uses are allowable or prohibited. Another example is Lake County Ordinance No. 1068, the primary regulation controlling recreation activity on Indian Valley Reservoir. This ordinance prohibits operation of motorized boats in excess of 10 mph on any part of the reservoir and in excess of 5 mph in some portions of the reservoir (Lake County Code of Ordinances, Section 15-5). These restrictions have the effect of limiting use of Indian Valley Reservoir primarily to small fishing boats and nonpowered boats.

The cities in the study area have also prepared general plans, which typically include a recreation element, with goals and policies that address natural and scenic open areas, trail systems, and regional recreation opportunities, among other topics. An example relevant to the Sacramento

River corridor is the *City of Redding 2000–2020 General Plan*. Specifically recognizing the Sacramento River’s centrality to the city’s park system, this general plan established policies calling for a regional river parkway and trails along the river, including continued development of the Sacramento River Trail (City of Redding 2000). The *City of Redding Parks, Trails, and Open Space Master Plan* establishes additional goals as part of its Park Strategy and Trails and Bikeway Strategy, which focuses on development of parks and trails in the Sacramento River corridor (City of Redding 2004). An additional example is the Recreation Element of the *City of Anderson General Plan*, which describes existing parks, park classifications and standards, park issues, and the city’s recreation trails network. An identified park need is to extend, enlarge, and protect Anderson River Park, which is located on the Sacramento River (City of Anderson 2007).

Should a place-based project be defined and pursued as part of the proposed program, and should the CEQA lead agency be subject to the authority of local jurisdictions, the applicable county and city policies and ordinances would be addressed in a project-level CEQA document as necessary.

3.18.3 Analysis Methodology and Thresholds of Significance

This section provides a program-level evaluation of the direct and indirect effects on recreation of implementing management actions included in the proposed program, expressed as NTMAs and LTMAAs. The methods used to assess how different categories of NTMAs and LTMAAs could affect recreational facilities and uses are summarized in “Analysis Methodology”; thresholds for evaluating the significance of potential impacts are listed in “Thresholds of Significance.” Potential effects related to each significance threshold are discussed in Section 3.18.4, “Environmental Impacts and Mitigation Measures for NTMAs,” and Section 3.18.5, “Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAAs.”

Analysis Methodology

Impact evaluations were based on a review of the management actions proposed under the CVFPP, expressed as NTMAs and LTMAAs in this PEIR, to determine whether these actions could result in impacts on recreation. NTMAs and LTMAAs are described in more detail in Section 2.4, “Proposed Management Activities.” The overall approach to analyzing the impacts of NTMAs and LTMAAs and providing mitigation is summarized below and described in detail in Section 3.1, “Approach to Environmental Analysis.” NTMAs are evaluated at a greater level of specificity than LTMAAs for the following reasons:

- NTMAs are better defined and less conceptual than the LTMAAs, are more likely to be implemented in the short term (within the first 5 years after approval of the CVFPP), and are generally less complex.
- NTMAs have more secure funding sources than LTMAAs.
- Environmental impacts of NTMAs can generally be evaluated more accurately than impacts of LTMAAs.

NTMAs can consist of any of the following types of activities:

- Improvement, remediation, repair, reconstruction, and operation and maintenance of existing facilities
- Construction, operation, and maintenance of small setback levees
- Purchase of easements and/or other interests in land
- Operational criteria changes to existing reservoirs that stay within existing storage allocations
- Implementation of the vegetation management strategy (VMS) included in the CVFPP
- Initiation of conservation easements included in the proposed program
- Implementation of various changes to DWR and Statewide policies that could result in alteration of the physical environment

All other types of CVFPP activities fall within the LTMA category. However, NTMA-type activities (e.g., remediation of existing levees) would continue to be implemented in the CVFPP study area into the longer term time frame of the LTMAAs.

NTMAAs are evaluated using a typical “impact/mitigation” approach. Where impact descriptions and mitigation measures identified for NTMAAs also apply to LTMAAs, they are also attributed to the LTMAAs, with modifications or expansions as needed. However, because many LTMAAs are more general and conceptual, additional impacts are described in a broader narrative format. Impacts of LTMAAs that are addressed in this narrative format are those considered too speculative for detailed evaluation, consistent with Section 15145 of the CEQA Guidelines. Following the narrative description of these additional LTMA impacts is a list of suggested mitigation strategies that could be employed, indicating the character and scope of mitigation actions that might be implemented if a

future project-specific CEQA analysis were to find these impacts to be significant.

Implementation of the proposed program would result in construction-related, operational, and maintenance-related impacts on recreation resources. Those activities that could result in effects on recreation that are inconsistent with recreation-related plans and policies for the public lands and waters are also evaluated in this section.

As mentioned previously, little to no effect on recreational facilities and activities would occur in the portion of the SoCal/coastal CVP/SWP service areas located outside of the Sacramento and San Joaquin Valley and foothills and the Sacramento and San Joaquin Valley watersheds because no program management activities are proposed in this portion of the study area; therefore, that geographic area is not discussed in detail in this section.

Thresholds of Significance

The following applicable thresholds of significance have been used to determine whether implementing the proposed program would result in a significant impact. These thresholds of significance are based on Appendix G of the CEQA Guidelines, as amended, and on reasonable expectations of substantial effects on recreational facilities, access, and activities that could occur on reservoirs, rivers, bypasses, and floodplains where proposed management activities could be implemented.

The thresholds of significance also account for the policy/regulatory environment of affected jurisdictions, as well as the regulatory performance standards of federal, State, regional, or local agencies relevant to the impact analysis. An impact on recreation is considered significant if implementation of the proposed program would do any of the following when compared against existing conditions:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated
- Result in substantial temporary restrictions to boat navigation or substantial delays to boat traffic passage on rivers
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment

The following are indications that a project may require the construction or expansion of recreational facilities:

- The permanent displacement of existing recreational facilities or substantial permanent decrease in access to existing recreational facilities or opportunities
- A substantial decrease in the quality of recreation in an area

Significance Thresholds Not Evaluated Further

The proposed program does not include development of homes or other land uses that would generate demand for neighborhood and regional parks. Therefore, the proposed program would not be expected to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. This issue is not evaluated further.

3.18.4 Environmental Impacts and Mitigation Measures for NTMAs

This section describes the physical effects of NTMAs on recreation. For each impact discussion, the environmental effect is determined to be either less than significant, significant, potentially significant, or beneficial compared to existing conditions and relative to the thresholds of significance described above. These significance categories are described in more detail in Section 3.1, “Approach to Environmental Analysis.”

Feasible mitigation measures are identified to address impacts identified as significant or potentially significant. The specificity of the mitigation measures is consistent with the broad, program-level nature of the CVFPP and the parallel program-level analysis in this PEIR. Mitigation measures identified in this PEIR would be applied as appropriate to specific future projects implemented under the CVFPP. Actual implementation, monitoring, and reporting of the PEIR mitigation measures would be the responsibility of the project proponent for each site-specific project. For those projects not undertaken by, or otherwise subject to the jurisdiction of, DWR or the Central Valley Flood Protection Board (Board), the project proponent generally can and should implement all applicable and appropriate mitigation measures. The project proponent is the entity with primary responsibility for implementing specific future projects and may include DWR; the Board; reclamation districts; local flood control agencies; and other federal, State, or local agencies. Because various agencies may ultimately be responsible for implementing (or ensuring implementation of) mitigation measures identified in this PEIR, the text describing mitigation measures below does not refer directly to DWR but instead refers to the “project proponent.” This term is used to represent all

potential future entities responsible for implementing, or ensuring implementation of, mitigation measures.

Impact REC-1 (NTMA): *Substantial Permanent Displacement of or Decreased Access to Recreational Facilities Caused by Levee Reconstruction, Improvements, or Setbacks*

Reconstructing and improving levees and constructing setback levees may displace existing recreational facilities or reduce existing access to recreation. For example, repairing, improving, or reconstructing levees could require removing boat ramps integrated into the level of the levee. If a project were to be completed on the levees of a bypass that is managed as a wildlife area and used for hunting and wildlife viewing, the work could displace the existing access roads, trails, or parking areas on or near the levees. Alternative facilities and access to the recreation opportunities within an affected area may not be available or may be inadequate for the level of demand. Therefore, these management activities may result in a substantial reduction in recreation opportunities that could require construction of replacement facilities elsewhere. This impact would be **potentially significant**.

Mitigation Measure REC-1 (NTMA): *Replace Displaced Recreational Facilities and Access*

Where recreational facilities or access must be displaced by levee reconstruction or improvements, facilities and access will be restored on site as part of the project design. If the facilities or access cannot be replaced at the project site, they will be replaced as close as possible to the original project site. Alternatively, existing facilities could be expanded to meet the demand for recreational opportunities lost with the removal of the facility at the project site, or to compensate for the loss of access resulting from project implementation. Where new facilities must be constructed or existing facilities are expanded, these actions will undergo necessary environmental review and mitigation will be implemented as appropriate. Please also see Impact Rec-6 (NTMA) below regarding environmental effects of new facilities.

Implementing this mitigation measure would reduce Impact REC-1 (NTMA) to a **less-than-significant** level.

Impact REC-2 (NTMA): *Temporary Decrease in Opportunities for Recreation or Access to Recreational Facilities during Construction of Conveyance Related Management Activities*

Activities such as using temporary construction staging areas for equipment and worker parking and establishing borrow sites for fill material may conflict with the ability of recreationists to use or access recreational facilities or engage in recreation activities during the construction period. For example, creating a staging area or borrow pit near a popular wildlife viewing site or a pond used by hunters may make those areas unattractive or unusable for wildlife viewing or hunting.

Establishing new off-road haul routes for construction materials near recreation sites may similarly conflict with use of or access to recreational facilities. Noise, dust, wildlife disturbance, and visual effects associated with these construction activities may all adversely affect recreation activities.

If public roads that currently provide recreation access would be used for construction access and haul routes, a conflict with recreation access may result. The level of conflict would increase if construction traffic would be substantial and few other routes would be available to the recreating public.

The timing of construction activities is an important determinant of potential effects on recreation. The spring and fall months are more often the peak-use periods for bypasses and similar areas used primarily for hunting and wildlife viewing, and for some rivers used for floating and fishing.

In general, the potential effects of construction on recreation would be of limited duration (i.e., lasting from a few weeks to a few months at any one site). The effects would also be localized, with similar unaffected recreational facilities and opportunities available in the region. There are foreseeable circumstances under which existing access to a recreation opportunity may be limited in an area and construction could restrict access to those limited facilities or resources for a construction season or more. (For example, a boat ramp could require removal and replacement as part of a levee project.) However, these circumstances would be rare and potential impacts would be temporary and localized. Therefore, this impact would be **less than significant**. No mitigation is required.

Mitigation Measure REC-2 (NTMA): *Minimize Construction Activities and Staging near Recreational Facilities and Time Such Activities to Avoid the High-Use Recreation Season*

Where feasible, the project proponent will avoid placing construction staging areas or borrow areas near recreational facilities or popular use areas, and will avoid using key recreation access routes as access and haul routes for construction. Where avoiding facilities is not possible,

construction will be scheduled to minimize temporary closure or access restrictions or other temporary adverse effects on recreation facilities. Numerous factors must be considered in the siting and timing of construction activities and selection of access and haul routes; for some projects, however, opportunities may exist to select from among several options those that would have the smallest effect on recreation.

Where feasible, the project proponent will schedule construction activities to avoid the high-use recreation season for the potentially affected areas. This frequently will not be possible for major repairs or upgrades because those major construction activities typically occur during the dry season (May through October). However, in some cases it may be possible to focus construction activity during the months when recreational activity would be least affected. In addition, the project proponent will avoid scheduling construction activities on weekend days, where feasible, to help minimize effects on recreational activities.

Although some temporary limitations on access to recreational facilities would likely still occur with implementation of this mitigation measure, the limitations would not be substantial. Thus, implementing this mitigation measure would further reduce Impact REC-2 (NTMA) and it would remain **less than significant**.

Impact REC-3 (NTMA): Reduced Functionality of Recreational Facilities and Decreased Opportunities for Recreation at Reservoirs as a Result of Changes in Reservoir Operational Criteria

Changing the operations of existing reservoirs may alter the amount and timing of the annual reservoir drawdown, which may increase or reduce access to recreational facilities and opportunities for recreation. Specifically, increasing reservoir drawdown may affect the functionality and capacity of recreational facilities such as boat ramps or marinas, and may reduce the length of time that these facilities are available to the public each year.

Generally, recreational facilities at reservoirs, such as boat ramps and marinas, are fully functional only within a certain range of pool elevations and above a certain minimum pool elevation. Lowering pool levels may reduce the capacity of boat ramps and marinas. Similarly, opportunities for recreation such as shoreline swimming and fishing are more readily available when pool elevations are within a particular range deemed most acceptable by visitors. Typically, lower pool elevations make using the shoreline for recreation less desirable because of the increasing distance of the water from shade trees, parking, restrooms, and other developed facilities. Adverse effects would occur when the program's proposed

management activities would reduce the frequency and length of time that reservoir levels are above these minimum levels or within desirable ranges.

Changing reservoir operations could also affect the amount of shoreline and surface area of the reservoir available for recreation. Increased drawdown may entirely dewater portions of a reservoir or cause areas where water is insufficiently deep to become inaccessible to boats. It also exposes more of the bare inundation zone, reducing the visual quality of the recreational setting. Increased or more rapid drawdown may thus displace recreation in some areas where dewatering occurs and shoreline uses are adversely affected. As a result, the remaining sites for shoreline recreation and the surface of the reservoir may become increasingly congested and crowded.

Conversely, reduced drawdown may enhance recreational access and use by maximizing the amount of reservoir shoreline and surface area available for recreation, maximizing boat access to shallow bays and coves, and minimizing the adverse visual effects of the exposed inundation zone. In this way, change in reservoir operations may have beneficial effects on recreation.

The proposed alterations to reservoir operations under the NTMAs (e.g., enhanced coordination with other reservoirs) would result in only minimal changes to reservoir water levels. They could also result in beneficial effects under some circumstances because drawdown could be reduced as creation or maintenance of flood capacity is more accurately managed. Therefore, this impact would be **less than significant**. No mitigation is required.

Impact REC-4 (NTMA): Boat Navigation Hazards and Passage Restrictions for Recreational Boat Traffic Resulting from Construction Activities Conducted from Barges in Waterways

Reconstructing or improving levees may affect boat passage and waterway navigability if some construction work (such as transferring materials and equipment) would be conducted from barges in a waterway used by recreational boats. Moored construction barges may present hazards to recreational boat traffic because of the obstructions they would create and the potential for changes in currents near the barges. Construction equipment may occupy a substantial portion of a waterway's width, restricting the portion of the waterway available to recreational boat traffic. Boats may also be required to slow in the vicinity of moored barges if no-wake zones are established to protect the barges, thus limiting the area to uses such as water-skiing and wakeboarding. Adverse effects on boat

traffic movement, including substantial delays, may occur in areas with heavy boat traffic.

In general, the potential effects of levee construction on recreational boat navigation would be of limited duration (i.e., lasting from a few weeks to a few months at any one site) and would be localized, with boat navigation unaffected on the great majority of the waterway. However, there are foreseeable (although rare) circumstances under which recreational boating traffic might be substantially restricted—such as if barges were moored for an extended period on a relatively narrow waterway frequently used by recreational boaters. Such circumstances would cause a substantial decrease in the quality of recreation in that area. Therefore, this impact would be **potentially significant**.

Mitigation Measure REC-4 (NTMA): *Maintain Safe Boat Passage and Provide Appropriate Safety Measures to Minimize Navigation Hazards Associated with Construction Equipment and Activity in Waterways*

The project proponent will establish construction exclusion zones around barges and other equipment in waterways to keep boats from approaching too closely. The project proponent will follow all standard U.S. Coast Guard practices for navigation safety and communications, and will ensure that barges and other construction equipment are lit at night to avoid potential boat collisions. The objectives of this mitigation measure are to maintain safe boat passage in affected waterways to the maximum extent possible, and to minimize boat traffic delays, particularly in high-traffic areas. Stopping boat traffic may be necessary for brief periods (for example, while material or equipment is being transferred to or from a barge); however, the expectation is that with appropriate caution, boat traffic will be able to navigate past construction sites at most times. Boats may be required to reduce speeds in the vicinity of the barge for safe passage. The period of time when boat traffic must be restricted will be minimized to the extent feasible.

Implementing this mitigation measure would reduce Impact REC-4 (NTMA) to a **less-than-significant** level.

Impact REC-5 (NTMA): *Decrease in Quality of Terrestrial and Water-Based Recreation as a Result of Removal of Woody Vegetation from Levees*

In certain cases, implementing aspects of the VMS may cause woody vegetation, including shade trees, to be eliminated from levees within the identified vegetation management zone (i.e., 20 feet below the waterside levee crown to 15 feet beyond the landside levee toe). Other vegetation

may be removed if an engineering evaluation determines that it poses an unacceptable risk to levee integrity, or if required for a levee repair or replacement project. Shade trees may also be lost to age or disease over time and not replaced through implementation of the life-cycle management (LCM) element of the VMS. (For more information on the VMS, see Section 2.4.3, “Other Near-Term Management Activities,” and Appendix E, “2012 Central Valley Flood Protection Plan Conservation Framework”).

Where woody vegetation would be removed from levees and adjacent levee toes, the area’s attractiveness for terrestrial recreational activities such as bank fishing and wildlife viewing could decline for several reasons: the amount of shade would decrease, habitat would be lost for birds and other wildlife whose presence generally enhances recreation, and visual quality would decrease. Removing woody vegetation from levees would also reduce the attractiveness of the adjacent waterways for some boaters, because the loss of this vegetation would reduce the scenic quality of the riparian corridor.

However, because of the biological importance of waterside vegetation (particularly shaded riverine aquatic habitat) along riparian corridors, it is anticipated that the vast majority of trees and other woody vegetation on levees would be retained, particularly on the lower waterside levee slope, with implementation of the VMS. On preexisting levees, vegetation below the top 20 feet of the waterside levee slope would remain in place unless an engineering evaluation determines that it would pose an unacceptable risk to levee integrity. Newly constructed levees and setback levees would be designed and constructed to accommodate trees and other woody vegetation. In many locations where levees are repaired, waterside trees and other woody vegetation would remain in place, particularly on the lower waterside slope and channel bank, because of environmental benefits. If removed to accommodate the repair, waterside woody vegetation generally would be restored to the repaired levee outside the vegetation management zone. Where vegetation could not be replaced on site, off-site in-kind mitigation would likely be required.

Also, implementing the CVFPP Conservation Strategy would result in increased distribution and quality of riparian habitat in some areas. If recreation activities were to continue in these areas, then the recreation opportunities would presumably be enhanced.

Overall, although changes in vegetation conditions resulting from the proposed program could adversely affect the quality of some recreation activities in some areas, these effects would not be substantial because lower levee slopes and waterside vegetation would be unaffected in a vast

majority of cases. Where this vegetation of most importance to recreation quality would be affected, on-site mitigation to restore waterside woody vegetation for habitat purposes would minimize the potential effects on recreation. In addition, adverse effects of removing vegetation in some areas would be offset, in many cases, by planting of riparian vegetation elsewhere. This impact would be **less than significant**. No mitigation is required.

Impact REC-6 (NTMA): *Environmental Effects Associated with Construction of Recreational Facilities and Access to Replace Facilities Displaced by Management Activities*

As described above in Impact REC-1 (NTMA) and Mitigation Measure REC-1 (NTMA), some NTMAs may permanently displace recreational facilities and access on or near levees, which would need to be replaced with new facilities and access constructed in the same general area. Constructing recreational facilities could have adverse effects on the environment. The facilities needing replacement would vary in type (e.g., boat ramps, picnic areas, parking areas, campgrounds, roadways) and capacity, and thus would have varied site footprints. However, the potentially affected recreational facilities are typically small with limited infrastructure (in contrast to the often large and intensively developed recreational facilities on the reservoirs in the study area). Given the low number of recreational facilities in the potentially affected area, it is likely that only limited new facilities would be required.

Constructing each new recreational facility would require ground disturbance, and infrastructure such as utilities and sanitary facilities may be included. These projects would be subject to the applicable federal, State, and local statutes, including those described in the various “Regulatory Setting” sections of this PEIR, and would undergo environmental review. Because these projects must undergo an environmental review and permitting process, any new facilities most likely would be constructed in areas comparable to the existing locations in terms of habitat sensitivity, and they would not be located in environmentally sensitive areas.

Because the environmental effects of constructing replacement facilities are unlikely to be substantial and would be mitigated as part of the permitting process for those facilities, this impact would be **less than significant**. No mitigation is required.

3.18.5 Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMA

This section describes the physical effects of LTMA on recreation. LTMA include a continuation of activities described as part of the NTMA and all other actions included in the proposed program, and consist of all of the following types of activities:

- Widening floodways (through setback levees and/or purchase of easements)
- Constructing weirs and bypasses
- Constructing new levees
- Changing operation of existing reservoirs
- Achieving protection of urban areas from a flood event with 0.5 percent risk of occurrence
- Changing policies, guidance, standards, and institutional structures
- Implementing additional and ongoing conservation elements

Actions included in the LTMA are described in more detail in Section 2.4, “Proposed Management Activities.”

Impacts and mitigation measures identified above for NTMA would also be applicable to many of the LTMA and are identified below. The NTMA impact discussions and mitigation measures are modified or expanded where appropriate to address conditions unique to LTMA. The same approach to future implementation of mitigation measures described above for NTMA and the use of the term “project proponent” to identify the entity responsible for implementing mitigation measures also apply to LTMA.

In addition, in some cases, LTMA could have impacts and require mitigation measures not previously addressed in the discussion of NTMA, and sufficient information is available for these LTMA to use the same impact/mitigation discussion approach used for the NTMA. In these cases, additional impacts and mitigation measures specific to LTMA are provided. However, as described previously and in Section 3.1.2, “Analysis Methodology,” because many LTMA are more general and conceptual, additional impacts of those LTMA are also described below in a broader narrative format, along with a list of suggested mitigation strategies that could be applied to these impacts. This more general analysis is provided in

the subsection titled “LTMA Impact Discussions and Mitigation Strategies.”

Impact REC-1 (LTMA): *Substantial Permanent Displacement of or Decreased Access to Recreational Facilities Caused by Levee Construction or Reconstruction*

This impact would be similar to Impact REC-1 (NTMA), as described above. With LTMA projects of a potentially larger scale and footprint (e.g., new flood bypasses), the potential for activities to conflict with existing recreational facilities is greater. This impact would be **potentially significant**.

Mitigation Measure REC-1 (LTMA): *Implement Mitigation Measure REC-1 (NTMA)*

Implementing this mitigation measure would reduce Impact REC-1 (LTMA) to a **less-than-significant** level.

Impact REC-2 (LTMA): *Temporary Decrease in Opportunities for Recreation or Access to Recreational Facilities during Construction of Conveyance Improvements*

This impact would be similar to Impact REC-2 (NTMA), as described above. In addition, improving conveyance with new levees, setback levees, or weirs and bypasses may generate additional conflicts with the ability of recreationists to use or access recreational facilities or engage in recreation activities during the construction period. However, potential impacts are expected to be temporary and localized.

This impact would be **less than significant**. No mitigation is required.

Mitigation Measure REC-2 (LTMA): *Implement Mitigation Measure REC-2 (NTMA)*

Implementing this mitigation measure would further reduce Impact REC-2 (LTMA) and it would remain **less than significant**.

Impact REC-3 (LTMA): *Reduced Functionality of Recreational Facilities and Decreased Opportunities for Recreation at Reservoirs as a Result of Changes in Reservoir Operational Criteria*

This impact would be similar to Impact REC-3 (NTMA), described above. Although changes in the operations of existing reservoirs may occur at a larger number of facilities under the LTMA, changes in operations would

remain minimal at each reservoir. Under the LTMA, this impact would be **less than significant**. No mitigation is required.

Impact REC-4 (LTMA): *Boat Navigation Hazards and Passage Restrictions for Recreational Boat Traffic Resulting from Construction Activities Conducted from Barges in Waterways*

This impact would be similar to Impact REC-4 (NTMA), described above. Widening floodways, constructing weirs and bypasses, or constructing new levees to develop floodplain storage or improve flood conveyance could affect boat passage, recreational boating activities, and waterway navigability during construction. Such effects may occur if construction activities would be conducted from barges in a waterway used by recreational boats.

This impact would be **potentially significant**.

Mitigation Measure REC-4 (LTMA): *Implement Mitigation Measure REC-4 (NTMA)*

Implementing this mitigation measure would reduce Impact REC-4 (LTMA) to a **less-than-significant** level.

Impact REC-5 (LTMA): *Substantial Decrease in Quality of Terrestrial and Water-Based Recreation as a Result of Removal of Woody Vegetation from Levees*

This impact would be similar to Impact REC-5 (NTMA). Removing woody vegetation from levees would reduce the area's attractiveness for terrestrial recreational activities such as bank fishing and wildlife viewing for several reasons: the amount of shade would decrease, habitat would be lost for birds and other wildlife whose presence generally enhances recreation, and visual quality would decrease. Although removal of woody vegetation could occur over a larger area under the LTMA, the same program requirements identified for NTMA for the replacement of riparian vegetation would apply. This impact would be **less than significant**. No mitigation is required.

Impact REC-6 (LTMA): *Environmental Effects Associated with Construction of Recreational Facilities and Access to Replace Facilities Displaced by Management Activities*

This impact would be similar to Impact REC-6 (NTMA), described previously. The LTMA include larger projects over a greater geographic area with greater potential to result in the need to construct replacement recreational facilities. However, for the same reasons described above for

the NTMAs, this impact would be **less than significant**. No mitigation is required.

Impact REC-7 (LTMA): *Substantial Displacement of or Decreased Access to Recreational Facilities Caused by Conveyance-Related and Other Management Activities*

Some of the conveyance-related and other management activities included in the LTMAs may permanently displace existing recreational facilities or reduce existing access to recreation. For example, widening floodways or creating new flood bypasses may displace recreational facilities or access. To cite a typical potential case, widening a bypass managed as a wildlife area and used for hunting and wildlife viewing may displace existing access roads, parking areas, and trails. Constructing setback levees, new levees, and floodwalls may similarly displace existing recreational facilities.

These management activities may also have beneficial effects that may compensate in part for displacement of recreational facilities and access. For example, widening floodways and constructing new bypasses could increase recreational opportunities by providing more space for recreational uses that typically occur in existing bypasses, such as hunting and wildlife viewing. However, mitigation for displacement of facilities and access may still be necessary, even in cases where there are also beneficial effects.

This impact would be **potentially significant**.

Mitigation Measure REC-7 (LTMA): *Replace Displaced Recreational Facilities*

This mitigation measure would be similar to Measure REC-1 (NTMA) as described above, but mitigation would be required at a broader range of recreational facilities and sites, beyond those associated with levees. Specifically, mitigation would be required at reservoirs, within bypasses, and at areas outside the present flood control system (for example, where a new bypass is constructed).

Implementing this mitigation measure would reduce Impact REC-7 (LTMA) to a **less-than-significant** level.

LTMA Impact Discussions and Mitigation Strategies

Because of the more general and conceptual nature of many LTMAs, a great deal of uncertainty exists about how some LTMAs may be implemented and what environmental effects might result from their implementation. This uncertainty is to be expected for a broad, multiyear, and in some areas, conceptual program such as the CVFPP. Although these

uncertainties exist, sufficient information exists to at least disclose additional potential impacts of LTMA's besides those discussed in the impact/mitigation pairings provided above. The following additional LTMA impacts are described in a broad narrative format; because of the uncertainty surrounding these impacts, no determination regarding their significance is provided. Consistent with Section 15145 of the CEQA Guidelines, these impacts are too speculative for evaluation beyond the narrative disclosure provided here.

Future project-specific CEQA evaluations for individual LTMA's will be used to determine the potential for the impacts described below to occur, determine their level of significance, and identify project-specific mitigation measures for significant impacts. Examples of potential mitigation strategies are provided after the following narrative impact discussions to disclose the nature and extent of mitigation actions that might be necessary to address these impacts.

For more information on this approach to evaluating LTMA impacts and providing mitigation strategies, see Section 3.1.2, "Analysis Methodology."

Impact discussions are divided among the geographic areas in the program study area (i.e., Extended SPA, Sacramento and San Joaquin Valley watersheds, and SoCal/coastal CVP/SWP service areas). They are further subdivided according to the type of action (i.e., construction of conveyance facilities, facilities operations and maintenance from conveyance actions, and other management actions).

LTMA Impact Discussions

Extended Systemwide Planning Area

Construction of Conveyance Facilities Construction-related impacts of LTMA's on recreational resources are thoroughly described and evaluated above in the analysis of NTMA's and LTMA's. A general narrative description of additional construction-related LTMA impacts in the Extended SPA is not required.

Facilities Operations and Maintenance from Conveyance Actions The LTMA's include activities that could alter downstream flows more substantially than the NTMA's. These activities could include reoperating a larger number of existing water storage facilities, and operating new flood bypasses and other large-scale conveyance facilities.

In addition to the effects described above (Impacts REC-1 through REC-7 (LTMA)), it is reasonable to assume that effects on river recreation activities could result from increased or decreased river flows. The

locations, timing, and magnitude of the many potential management activities that could be implemented as part of the proposed program are not yet known, and various activities can have additive or opposing effects on river flows. Therefore, the impacts of these activities on recreation are necessarily speculative. For example, altering reservoir storage (via changes to operational criteria) and increasing floodplain “transitory” storage capacity by widening floodways or constructing new bypasses may reduce river flows on certain river reaches at certain times. Alternatively, changing operational criteria for reservoirs may increase river flows on certain river reaches at certain times. Reducing flows may make boating more difficult or hazardous in shallow river reaches, or may make wading in a river easier for anglers. Increasing flows may also make boating more hazardous on certain river reaches, or may make wading in a river to fish more difficult above certain flow thresholds. Changing flows may also affect riverside recreational facilities such as boat ramps and marinas, and may affect fisheries and thus fishing success.

Other Management Actions Impacts on recreational resources resulting from “other management actions” included in LTMA are thoroughly described and evaluated above in the analysis of NTMA and LTMA. A general narrative description of additional LTMA impacts related to other management actions in the Extended SPA is not required.

Sacramento and San Joaquin Valley Watersheds

Construction of Conveyance Facilities Construction-related impacts on recreational resources resulting from LTMA are thoroughly described and evaluated above in the analysis of NTMA and LTMA. A more general narrative description of additional construction-related LTMA impacts in the Sacramento and San Joaquin Valley watersheds is not required.

Facilities Operations and Maintenance from Conveyance Actions Direct and indirect impacts on recreation in the Sacramento and San Joaquin Valley watersheds could result from conveyance-related management actions implemented in the Extended SPA.

These impacts are necessarily somewhat speculative, given that the management actions would be implemented generally downstream rather than in the watershed portion of the study area. However, some potential impacts can be reasonably anticipated. For example, if conveyance-related improvements in the Extended SPA were to allow a greater volume of flood flows to be conveyed, greater flood flows may be released from reservoirs within the watershed, which may benefit or adversely affect boating on the river reaches below those reservoirs. For example, greater flows may enhance whitewater conditions on rivers used for rafting and

kayaking. At the same time, nonwhitewater boating and angling may be adversely affected by substantially increased flows. Generally, flows above a certain minimum threshold are desired for a quality whitewater experience, while flows below a certain maximum threshold are desired for nonwhitewater boating, angling, and other nonwhitewater activities. With regard to a particular river or river reach, these desired flow ranges may overlap to some degree, but nonwhitewater boating activities generally require lower flows.

Other Management Actions Impacts on recreational resources resulting from “other management actions” included in LTMAAs are thoroughly described and evaluated above in the analysis of NTMAAs and LTMAAs. A general narrative description of additional LTMAA impacts related to other management actions in the Sacramento and San Joaquin Valley watersheds is not required.

SoCal/Coastal CVP/SWP Service Areas

Construction of Conveyance Facilities None of the program’s management actions would be implemented in the SoCal/coastal CVP/SWP service areas. Therefore, no construction-related impacts on recreational resources resulting from LTMAAs would occur.

Facilities Operations and Maintenance from Storage or Conveyance Actions None of the program’s storage or conveyance management actions would be implemented in the SoCal/coastal CVP/SWP service areas. In addition, implementation of the proposed program would not result in long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas (see Section 2.6, “No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries”). Given these conditions, little to no effect on recreational facilities and activities would occur in the SoCal/coastal CVP/SWP service areas.

LTMA Mitigation Strategies The following mitigation strategies are examples of approaches that may be considered to address significant impacts via the mechanisms described above. These mitigation strategies may be considered, as applicable, during project-level evaluation of specific LTMAAs. For more information on LTMAA mitigation strategies, see Section 3.1.2, “Analysis Methodology.”

Specific mitigation measures identified above in the NTMAA and LTMAA impact/mitigation pairings are not identified again in the mitigation strategies. It is assumed that mitigation measures described in the impact/mitigation pairings above would already be required, as applicable, as part of the project-level evaluation of specific LTMAAs. Not all mitigation strategies will apply to all LTMAAs; the applicability of

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mitigation strategies will vary based on the location, timing, and nature of each management action. In addition, some mitigation strategies on their own may not constitute sufficient mitigation under CEQA but must be coupled with other mitigation strategies to fully address the impacts of LTMA.s.

The following potential mitigation strategies have been identified for recreation:

- Modify existing river recreational facilities that are subject to substantial adverse effects from downstream changes in flows to maintain facility usability.
- Where modifying facilities is not feasible, expand existing river recreational facilities or construct new facilities to replace facilities that are subject to substantial adverse effects from downstream changes in flows.
- Enhance recreation access on unaffected rivers or river reaches in the vicinity of river reaches that are subject to substantial adverse effects.