

Chapter 6
Recreation

Affected Environment

Shasta Lake

Shasta Lake is a unit of the Whiskeytown-Shasta-Trinity National Recreation Area (NRA) with recreational facilities and activities administered by the U.S. Forest Service (USFS). Approximately 80% of the recreational use in the Whiskeytown-Shasta-Trinity NRA occurs at Shasta Lake (U.S. Forest Service 2000). When full, the lake has a surface area of approximately 29,500 acres, 370 miles of shoreline, and surface elevation of 1,067 feet above mean sea level (msl). The lake has four main arms: the Sacramento River, McCloud River, Pit River, and Squaw Creek.

Water-dependent activities include power boating, house boating, water skiing, and warmwater and coldwater fishing. Water-enhanced activities include camping, hunting, and wildlife viewing. Recreational use at Shasta Lake averages about 2.4 million visitor days per year, with an estimated 75% of the recreational use occurring between May and September (Bureau of Reclamation 1997).

Facilities include several marinas, seven public boat ramps, three picnic areas, and 26 public campgrounds. Boat ramp facilities are located on all four arms of the reservoir. Several boat ramps have multiple lanes/ramps allowing boat launching to occur at low lake levels. The Hirz Bay and Packer's Bay boat ramps, located on the McCloud River arm, have three ramps and can remain in operation until the lake elevation is drawn down 155 feet. The Centimudi boat ramp near Shasta Dam and the Jones Valley boat ramp on the Pit River arm can both remain in operation until the lake elevation is drawn down 210 feet.

Trinity Lake

Trinity Lake is a unit of the Whiskeytown-Shasta-Trinity NRA with recreational facilities and activities administered by the USFS. The lake has 145 miles of shoreline 17,000 surface acres and a surface elevation of 2,370 feet above msl when full.

Water-dependent activities include power boating, house boating, water skiing, swimming and fishing. Water-enhanced activities include camping, hiking, hunting, and wildlife viewing. Recreational use at Trinity Lake was estimated at about 485,000 recreation visitor days in 1995 (U.S. Fish and Wildlife Service et al. 1999). Recreation facilities at Trinity Lake include 24 campgrounds, two swimming areas, and three day-use areas. Major boat ramps operated by the USFS include Minersville on the Stuart Fork arm, Trinity Center on the North Lake area, and Fairview near the Trinity Dam. There are four marinas located on the lake.

Oroville Reservoir

Recreation facilities and activities at Oroville Reservoir are managed by California Department of Parks and Recreation (DPR) as part of the Lake Oroville State Recreation Area (SRA). The reservoir has 167 miles of shoreline, 15,800 surface acres, and a surface elevation when full of 900 feet above msl.

Water-dependent activities include power boating, house boating, water skiing, swimming and fishing. Water-enhanced activities include camping. Bidwell Canyon and Loafer Creek on the southern shoreline and Lime Saddle on the West Fork are the major use areas. In addition to formal campgrounds, camping is allowed along the lake's shoreline and at boat-in campgrounds. Most water-dependent recreation occurs during the spring and summer months.

Folsom Reservoir

Folsom Reservoir is part of the Folsom Lake SRA, an 18,000-acre area encompassing Folsom Lake and Lake Natoma managed by the DPR. The Folsom Lake SRA is one of the most heavily used recreation areas in the California State Park System because of its proximity to large urban areas, the diminishing open space of the area, and the high regional interest in recreation. When full, the reservoir has a surface area of approximately 11,900 acres and 75 miles of shoreline and a surface elevation of 466 feet above msl.

Folsom Reservoir accommodates a variety of water-dependent recreational activities, including power and sail boating, camping, fishing, swimming, water skiing, jet skiing, and windsurfing. Major shoreline use areas are Beal's Point, Granite Bay, and Rattlesnake Bar on the western shoreline; Folsom Point (formerly Dyke 8) and Folsom Lake Marina at Brown's Ravine on the southern and eastern shorelines; and the Peninsula Campground between the north and south forks of the American River. Each of these areas contains a boat ramp and various other recreational facilities. Folsom Lake Marina at Brown's Ravine, the only marina on Folsom Lake, is open year-round and has a main boat ramp, a low-water boat ramp, and 685 slips available for mooring. The recreation area has approximately 80 miles of trails available for hiking and horseback riding and approximately 30 miles of paved and unpaved bicycling trails.

Boating, sailing, and water skiing take place throughout the main reservoir area. Anglers fish from boats throughout the lake and especially in the upper arms that are designated slow-boating zones. Fishing is mainly for coldwater species, such as rainbow trout and kokanee salmon, and warmwater species, such as bass, catfish, and sunfish. Swimming and sunbathing take place at many undesignated areas along the reservoir shoreline.

The water level at Folsom Lake dictates the type of recreation and length of the season. During years with normal precipitation the main recreational season is May through Labor Day in September, when recreation is focused primarily on water-dependent activities. Approximately 625,000 people visited Folsom Lake SRA between July and September of 2001 and approximately 695,000 people visited the SRA between April and June (California State Parks 2001). During the remaining months of the year, use consists mainly of fishing and land-based recreation. Visitation from October through December and January through March totaled approximately 175,000 and 165,000 people in 2001, respectively (California State Parks 2001). In general, the Granite Bay, Beal's Point, Folsom Point, and Brown's Ravine use areas account for approximately 50% of the use of Folsom Lake SRA.

Water-dependent activities account for nearly 85% of the recreation use at Folsom Lake. Boating is the most popular activity at the reservoir, followed by swimming and fishing. (Sacramento Area Flood Control Agency and U.S. Bureau of Reclamation 1994).

Lake Natoma

Lake Natoma, just downstream of Folsom Reservoir, is also a unit of the Folsom Lake SRA. The lake has a surface area of approximately 500 acres at full capacity and has approximately 10 miles of shoreline. As a regulating reservoir, Lake Natoma's water level may fluctuate up to 7 feet per day (EDAW and Surface Water Resources 1999).

Water-dependent activities include fishing, rowing, kayaking, sailing, and windsurfing. Water-enhanced facilities consist primarily of picnic areas and bicycle, equestrian, and pedestrian trails, which are located on the north and south shores of the lake. Facilities include the California State University, Sacramento (CSUS), aquatic center. CSUS sponsors local, regional, and national rowing competitions on Lake Natoma, and its intercollegiate and club teams use the lake for rowing practice. An 8.4-mile-long segment of the Jedediah Smith Memorial Trail extends along the north shore of the lake. Developed recreation facilities are located at Mississippi Bar, Nimbus Flat, and Negro Bar. Boat-launching facilities are located at Nimbus Flat and Negro Bar, along with swimming-designated beaches.

Annual visitation at Lake Natoma is reported as part of the total visitation to the Folsom Lake SRA, discussed above in the "Folsom Reservoir" section.

Water-enhanced activities and water-dependent activities each account for approximately 50% of all recreation activities. Trail use (jogging, bicycling, hiking, and horseback riding), rafting, and boating are the most popular recreational uses of the lake area. The lake's stable water level conditions make it a popular destination for boating, sailing, rowing, and windsurfing. (EDAW and Surface Water Resources 1999).

Lower American River

The lower American River extends for 23 miles between Lake Natoma and the confluence with the Sacramento River. The river passes through the American River Parkway, a 6,000-acre open space corridor that includes a series of interconnected parks along the publicly owned lands of the river. The parkway has 14 county parks that provide user access and the 32-mile Jedediah Smith Memorial Trail provides bicycling, hiking, and horseback-riding opportunities from Discovery Park to the Folsom Lake SRA.

The lower American River is a major site for recreational boating (rafting, kayaking, and canoeing), fishing, swimming, and wading. Boating activity, particularly commercial rafting, depends primarily on air temperature, river flows, and season of the year. The most popular reach for rafting is from Sunrise Avenue to Goethe Park. There are 10 popular swimming areas along the river including Paradise Beach and Tiscornia Park, both with large sand beach areas. Both shoreline and boat fishing take place throughout the river. Anglers fish mainly for salmon, steelhead, and shad. Fishing is permitted year-round within the parkway, except during fall and early winter when the river is closed from Ancil Hoffman Park on the west to the Hazel Avenue Bridge on the east to protect spawning fish (EDAW and Surface Water Resources 1999).

Parkway visitation in 1997 was estimated at 6 million visitor-days. Visitation is expected to increase to 9.6 million visitor-days by 2020, assuming river flows are stable. (County of Sacramento and Bureau of Reclamation 1997). Approximately 31% of all visits were associated with water-dependent activities. Boating, particularly rafting, is the most popular water-dependent activity on the river, followed by fishing and swimming. (Sacramento Area Flood Control Agency and U.S. Bureau of Reclamation 1994). About 90% of annual rafting rental business occurs between Memorial and Labor Day. (Jones & Stokes 2001).

Sacramento River

The Sacramento River extends for 300 miles between Keswick Reservoir and the Delta. Public access points to the river are administered by the State of California, Bureau of Land Management, and various counties and cities along the river. Popular water-dependent activities include boating and fishing. Water-enhanced activities include camping, hiking, picnicking, and sightseeing.

Keswick Dam to American River

Numerous recreation areas are located on the reach of the river between Keswick Reservoir and the American River confluence. Fishing, rafting, canoeing, and kayaking activities are available along most of the upper Sacramento River and are popular activities on the river's northern reach. Boating, rafting, and swimming generally take place in summer months, and fishing is a year-round activity. Water-dependent activities (swimming, boating, fishing) account for approximately 52% of the recreation uses on the Sacramento River (County of Sacramento and U.S. Bureau of Reclamation 1997).

American River to Courtland

Downstream of the American River, the Sacramento River, is a popular boating and fishing area, with most boating occurring during the summer months. Public parks and trails, private marinas, and public boat launching facilities are located along this reach of the river.

Public parks, including Miller and Garcia Bend, have picnic sites, playgrounds, and multi-use fields. Garcia Bend Park, located in Sacramento's Pocket Area, is a 24-acre riverfront park that has a major boat-launching ramp for the entire Sacramento area, a playground, soccer fields, and a parking area. On- and off-street bike trails extend along this portion of the river. The Sacramento River Bike Trail begins with an off-street trail at the American River confluence and connects to various on-street and off-street trail segments. The southern segment is a 2-mile-long, on-levee, two-lane bike trail extending from Garcia Bend Park to a point approximately 6,000 feet north of the Freeport Bridge. The City of Sacramento is planning to extend the trail from its current end point (approximately 6,000 feet north of the Freeport Bridge) to the Freeport Shores Youth Sports Complex, with construction scheduled for 2003. Boating facilities between Sacramento and Courtland include the large Sacramento Marina, the Freeport Marina (145 berths), three medium-size marinas (50–200 berths), five small marinas (fewer than 50 berths), and five launch ramps (Delta Protection Commission 1997).

In 1980 (the last recreation-user survey completed for the entire river), total annual recreational use was estimated to total 2 million 6-hour visitor days (Jones & Stokes Associates 1996). In May 1995, a survey was conducted of registered boat owners and licensed anglers who recreate in the Sacramento–San Joaquin Delta. The portion of the lower Sacramento River corridor from the City of Sacramento south to Courtland was included in the survey. Fishing from a boat, cruising, water-skiing, and swimming account for 90% of all recreation occurring on this segment of the river. Fifty-one percent of fishing took place from boats and 44% from shore. However, fishing in this segment of the river accounts for only 10% of all fishing in the Sacramento–San Joaquin Delta as a whole. In addition, recreation use of this segment of the river is low in all boat-use

categories when compared to the Delta as a whole. (Delta Protection Commission 1997).

Water-enhanced activities occurring on this segment of the Sacramento River include sightseeing, viewing wildlife, visiting cultural or historic sites, and bicycling. Other less popular activities include walking, picnicking, and swimming from shore.

City of Sacramento

The City of Sacramento provides more than 160 developed parks and open space areas. These include neighborhood, community, and regional parks with playgrounds, play equipment, picnic areas, sports fields, basketball courts, boat launch ramps, restrooms, community centers, and other special facilities. Many miles of parkways, waterways, and off-street bikeways are also maintained. The city parks are divided into 11 community areas. The Airport-Meadowview Area includes 13 park and recreational facilities. The South Sacramento area includes 18 park and recreational facilities.

Sacramento County

Recreation facilities in southern Sacramento County are provided by the Southgate Park District (District). The District encompasses 52 square miles and includes 35 parks, four community centers, three sports complexes, two swimming pools, an 18-hole golf course, and many parkways and landscape corridors. Private facilities within the district area include the Champions Golf Links, located on the corner of Gerber Road and Elk Grove–Florin Road. Major bike trails include the Florin Creek Trail that runs from Persimmon Road to Stockton Boulevard, and the Laguna Creek Trail that extends along Laguna Creek from east of Vineyard Road to Calvine Road.

Folsom South Canal Bike Path

The reach of the canal from Nimbus Dam to about Sloughouse Road includes a bike and foot path open to the public year-round. The path is used for recreational bicycling, commuter bicycling, and walking. South of Sloughouse Road, the canal is not open to the public. Swimming and fishing are not allowed in the canal, and use of motorized vehicles along the canal is prohibited.

Upper Mokelumne River

The upper Mokelumne River is a popular recreational destination. The river is a very popular site for whitewater boating, though it hosts other water-dependent activities such as fishing, gold mining, and swimming.

Electra Recreation Area and Electra Run

The Mokelumne River is one of several rivers in the region that offer whitewater recreation opportunities. Popular whitewater recreation opportunities on the Mokelumne River include the Devil's Nose Run, the Tiger Creek Dam Run, the Ponderosa Way Run, and the Electra Run. The Electra Recreation Area and Electra Run is a 3.5-mile-long stretch of the Mokelumne River between PG&E's Electra Afterbay Dam and SR 49. The Electra Recreation Area supports whitewater boating, fishing, gold mining, and swimming. Various entities own the land along this stretch of the river, including private landowners, PG&E, and BLM. Public access to this area is via SR 49 and Electra Road, which runs along the north side of the river (Entrix 1998).

Picnicking, swimming, fishing, and gold-mining activities occur throughout this stretch of the river. Most activity is concentrated around PG&E's Electra Day Use Area, located approximately 0.20 mile below the Electra Powerhouse Afterbay Dam; the area has a restroom, parking area, picnicking facilities, and sandy beach area. Two other well-defined beaches with restroom facilities are located along this stretch of the river (0.45 and 0.91 mile downstream from the Electra Powerhouse Afterbay Dam). (Entrix 1998.).

The Electra Run extends approximately 3 miles from below the PG&E Electra Afterbay Dam to the SR 49 bridge. Access to the put-in for the whitewater run is from SR 49 and Electra Road, near the Electra Picnic Area. Two take-out areas are used by boaters: one on Electra Road approximately 0.5 mile upstream from the SR 49 bridge, and the other at the SR 49 bridge (Entrix 1998).

The run has a gradient of about 25 feet per mile and encompasses about 12 rapids ranging in difficulty from Class II to Class III. The resource is a very short 1-day run, which boaters often boat twice in one day. Two Class II/Class III rapids distinguish the run: the Chute, approximately 1.74 miles downstream from the Electra Powerhouse Afterbay Dam; and an S-turn about 2.31 miles downstream from the dam. The run features a slalom course site where the Sierra Club holds its annual Mokelumne River Slalom Race in mid-October (Entrix 1998).

Flows in the reach of the river between the Electra Afterbay and Pardee Reservoir are affected by releases from the Electra Powerhouse and upstream hydrologic conditions. Flows supporting whitewater boating range from 500 to 3,000 cfs. Based on boater evaluations, the minimum flow for whitewater boating on the river (i.e., the point at which the river provides a marginally acceptable whitewater experience) is 500 cfs. Flows of 800 cfs or greater are

necessary to support quality whitewater experiences, while approximately 1,500 cfs is the optimum flow level for whitewater recreation. Above 3,000 cfs, the difficulty and danger of the whitewater increases significantly, providing fewer recreation opportunities (EA Engineering, Science, and Technology 1993). Table 6-1 lists the recreational resources in the Mokelumne River in greater detail.

Table 6-1. Recreational Resources in the Mokelumne River between SR 49 and the PG&E Electra Afterbay Dam

River Mile	Description	Elevation (ft)*
0.00	Electra Powerhouse Afterbay Dam	677.6 (crest)
0.05	Class II+ rapid: Maytag Hole	665.3
0.22	Electra Day Use Area (put-in)	660.6
0.45	Beach (two outhouses)	655.1
0.56	Class II rapid: Waterfall Rapid	653.7 (top)–649.3 (bottom)
0.91	Beach with restroom	642.3
1.01	Begin slalom course site	641.2
1.08	Class II+ rapid: Jet Ferry Rapid	Est. 640.0 (top)–634.0 (bottom)
1.24	End slalom course site	634.7
1.40	Class II rapid	N/A
1.50	Estimated elevation of 625.0	Est. 625.0
1.57	Class II rapid	N/A
1.74	Class II+/III rapid: The Chute	623.0 (top)–613.9 (bottom)
1.85	Class II rapid	N/A
2.02	Class II- rapid	N/A
2.10	Quiet pool and beach area	610.0
2.18	Class II- rapid	N/A
2.28	Class II	N/A
2.31	Class II+/III- rapid: S-Turn	606.6 (top)–601.8 (bottom)
2.40	Main take-out	≈598.0
2.48	Class II+ rapid	N/A
2.88	SR 49 bridge (take-out)	592.2

Source: Entrix 1998

* Elevations of recreational resources at Pardee Reservoir were derived from a digital elevation model developed by Pacific Aerial Surveys. Elevation data for recreational resources on the Mokelumne River between SR 49 and the Electra Afterbay Dam were derived through on-ground surveys by Entrix in October 1996. The area was re-surveyed in September 1997 by Topographic Surveys Inc. The 1997 survey confirmed the data developed by Entrix.

The popularity and use of the Electra Run is the result of a combination of factors. Few other river sections in the state offer the combination of proximity to local and regional populations, accessibility via good paved roads, and reliable later summer flows as the Electra Run. (EA Engineering, Science, and Technology 1993).

The Electra Run is a popular run for beginners to learn and practice whitewater boating. Peak use occurs between May and September. Surveys conducted between May and July 1993 indicate that approximately 900 people boated the Electra Run during that period. The predominant craft observed at that time were hard-shell kayaks (40%), followed by rafts (22%), inner tubes (19%), inflatable kayaks (12%), and canoes (7%). (EA Engineering, Science, and Technology 1993).

Typically, rivers providing adequate late summer flows for whitewater boating will have substantial use in late summer and fall months as flows in other rivers decrease. Field observation conducted October 16, 17, and 18, 1996, observed approximately two to six boats each day. (Entrix 1998). The Mokelumne River Slalom Race on October 19 and 20, 1996, had 39 contestants.

Middle Bar Bridge and Take-Out Facility

The Mokelumne River continues approximately 2 miles from the SR 49 bridge and flows into Pardee Reservoir near the Middle Bar Bridge. This reach of the river extends the Electra Run to more than 5 miles and depending on flow includes one Class III- rapid and four smaller rapids. Most of the land on both sides of this river segment is owned by EBMUD and is closed to the public. The only public access into the upper Pardee Reservoir is the Middle Bar Bridge crossing. The primary recreation use is fishing from the Middle Bar Bridge. When full, Pardee Reservoir extends approximately 1 mile upstream from the bridge crossing. Parking is allowed at the bridge's north and south abutments and a public restroom is provided near the south abutment.

Historically, EBMUD has not allowed egress from the river across EBMUD lands. As a result, trespassing on EBMUD property has occurred as boaters continuing downstream of the SR 49 take-out would exit the river or reservoir near the Middle Bar Bridge. For safety and management reasons, a take-out facility was proposed to provide easier egress from the river, thereby limiting bodily contact with reservoir waters and protecting reservoir water quality. Construction of the Middle Bar Take-Out Facility began in fall 2002 and was completed in May 2003. The take-out facility is located on the north side of the reservoir adjacent to the Middle Bar Bridge and Middle Bar Road and has a footprint of approximately 2 acres.

The facility extends inland from the current shore of the river to an approximate elevation of 600 feet above msl. The facility includes the following amenities:

- a gravel-surfaced parking area for approximately 20 to 25 vehicles, including one space designated for the disabled;
- an Americans with Disabilities Act (ADA)–compliant two-stall vault toilet facility, as well as trash and recycling receptacles;
- a pedestrian path from the parking area to a boating take-out on the upstream side of the Middle Bar Bridge, following the natural topography to provide a more gradual route of egress from the river;
- a pedestrian path to the Middle Bar Bridge from the parking facility for anglers; and
- appropriate signage and fencing to support the use and facilities as well as to protect the environment, including an information board in the parking area with rules and safety information.

Development of the new facility supports whitewater boating on the Middle Bar portion of the river and fishing from Middle Bar Bridge.

Pardee Reservoir

Pardee Reservoir provides both water-dependent and water-enhanced recreation opportunities. Water-dependent recreation includes boating and fishing. Recreation activities resulting in body contact with the water is prohibited to protect water quality. Water-enhanced recreation includes camping, picnicking, hiking, and horseback riding.

The Pardee Recreation Area is a major recreation site at Pardee Reservoir. The area is located on the west shore of the reservoir's north arm and provides facilities for recreation activities occurring at the reservoir. The area is open February through October and is closed during the migratory bird season as part of EBMUD's wildlife enhancement program. Recreation facilities include a marina, bait shop, boat rental, 10-lane launch ramp, fish-cleaning station, 100 tent campsites, short- and long-term RV areas, day-use areas with picnic tables, hiking trails, two swimming pools, barbecues, restaurants, and a coffee shop/store.

Average annual use of the Pardee Recreation Area totaled 71,000 visitors in 2000 and 82,000 visitors in 2001. The highest use generally occurs in April through July and then tapers off through October, when the recreation area closes. (Entrix 1998).

Except for the Pardee Recreation Area and trails, EBMUD-owned land around the reservoir is closed to general public access. Outside of the recreation area, the Mokelumne Coast to Crest Trail extends along the south side of the reservoir from the south arm to the end of the east arm (about 8 miles up the Mokelumne River Canyon). A staging area is located at the head of this horseback riding and hiking trail. The trail is 10.6 miles long with its lowest point, 600 feet above msl, at McAfee Gulch. The trail and staging areas are open year-round.

DFG and EBMUD support an active stocking program for rainbow trout and kokanee salmon, the primary target species for anglers on the reservoir. In addition to these coldwater species, anglers fish for warmwater species such as bass, catfish, and sunfish. Pardee Reservoir is host to several fishing derbies and special events each season. Each year the dates are dependent on the weather, water temperature, and the schedule of other regional events.

Camanche Reservoir

When full, Camanche Reservoir has a surface area of 7,622 acres, 64 miles of shoreline, and a surface elevation of 236 feet above msl. Facilities include a major recreation area on the south shore and another on the north shore. Both the north and south shore areas provide tent and RV campsites, cottages, marina, boat rentals, and paved boat ramps. Other facilities include hiking trails, picnic areas, and tennis courts.

Water-contact recreation is allowed at Camanche Reservoir because the reservoir is not used exclusively as a drinking water supply by EBMUD. Water-dependent recreational activities include swimming, water skiing, jet skiing, windsurfing, and fishing.

Use at Camanche Reservoir increased from 378,000 visitor use days in 2000 to 395,000 visitor use days in 2001.

Lower Mokelumne River

The lower Mokelumne River extends for approximately 30 miles from Camanche Dam to the tidal influence of the Sacramento–San Joaquin River Delta. Most of the lower Mokelumne River traverses private rural lands, and no single entity administers all the recreation and access facilities. Major public recreational facilities on the river include:

- EBMUD’s Mokelumne River Day Use Area on McIntire Road near Camanche Reservoir,
- San Joaquin County’s Stillman Magee County Park on Mackville Road near the town of Clements,
- the City of Lodi’s Lake Lodi Park near the community of Woodbridge,
- San Joaquin County’s Woodbridge Regional Park accessible from River Meadows Drive in Woodbridge, and
- San Joaquin County’s 17-acre Woodbridge Regional Wilderness Area.

Most of the recreation facilities along the lower Mokelumne River are private boat launches or fishing access points. Popular water-dependent activities on the

lower Mokelumne River include fishing, wading, swimming, canoeing, kayaking, and tubing.

Plans and Policies

American River Parkway Plan

The first Parkway Plan was produced in 1962. It was revised in 1968 and again in 1976 with significant public input. The plan calls for evaluation and revision, if necessary, every 5 years. The current version was published in 1985.

The American River Parkway Plan was developed to protect and manage the parkway. The plan addresses the entire parkway regardless of jurisdiction and provides basic policy guidance for its future. The goals of the Parkway Plan are to:

- provide, protect, and enhance for public use a continuous open space greenbelt extending from the Sacramento River to the Sierra Nevada;
- provide appropriate access and facilities so that present and future generations can enjoy the amenities and resources of the parkway;
- preserve and improve the natural, archeological, historical, and recreational resources of the parkway, including an adequate flow of high-quality water, anadromous and resident fishes, migratory and resident wildlife, and diverse natural vegetation; and
- mitigate adverse effects of activities and facilities adjacent to the parkway.

Sacramento River Greenway Draft Plan

The Sacramento River Greenway Plan is a regional resource management plan for a portion of the Sacramento River. The Greenway Plan was initiated by the State Lands Commission, through a Memorandum of Understanding with the City of Sacramento and the Counties of Sacramento and Yolo. The general goals of the plan are: to preserve, protect, enhance, and restore the riparian corridor of the river and its associated ecosystems; and to design a system of controlled public access for active and passive recreational uses related to the river.

The Sacramento River Greenway Plan has a proposed land use designation at the intake facility of "Nature Study" area. Activities permitted within these areas are public access for nature study; pedestrian use on designated trails or observation areas; bicycling, where appropriate; and habitat restoration and monitoring, where suitable.

Sacramento River Parkway Plan

The Sacramento River Parkway Plan is the “area plan” for the City of Sacramento portion of the Sacramento River Greenway Plan. The main features of the plan are the preservation of riparian habitat, while providing public access to recreational opportunities along the Parkway. The plan contains land use policies and implementation measures that support these goals.

The proposed location of the intake facility is in an area designated as a proposed Major Access Point (Freeport Reservoir) in the Sacramento River Parkway Plan. The access point would include restrooms, a lawn, drinking fountain, parking and bicycle-staging area, bicycle access, and a bridge over Freeport Boulevard accessing the Freeport Shores Youth Sports Complex.

City of Sacramento General Plan

The City of Sacramento General Plan contains goals and policies to conserve and protect natural resources and planned open space areas. Specific to recreational resources, the City will continue the program established by the Department of Parks and Community Services in maintaining parks, trees, and other landscaping. The City will provide open space for recreation, including conservation and protection of the American and Sacramento River Parkways. It is a policy of the City to implement the goals and policies of the Sacramento River Parkway Plan. The City of Sacramento General Plan also contains goals and policies to develop bicycling as a major transportation mode.

Pocket Area Community Plan

The Pocket Area Community Plan includes the South Pocket Specific Plan. The South Pocket is generally bounded by Florin Road to the north, the City of Sacramento boundary to the south, the Sacramento River to the west, and Interstate 5 to the east. The South Pocket Specific Plan is intended to ensure a healthy and attractive living environment for residents of the area. Policies of the plan include providing suitable access to the Sacramento River, interfacing development with the Sacramento River in a manner that promotes the best use of this recreation resource, and ensuring that a continuous park–open space system is provided that links public facilities and activity centers wherever possible.

The plan designates the proposed intake facility site as a major parkway recreation node. This node will provide a variety of permanent recreation-related improvements such as lawns, picnicking facilities, restrooms, and parking. Also, an off-street bikeway is proposed for the levee top along the entire length of the area.

County of Sacramento General Plan

The Sacramento County General Plan includes a conservation element that addresses the preservation and protection of waterways for recreational purposes. It is the specific goal of the County to supply water to Sacramento residents while maintaining river flows and reservoir levels that protect environmental resources and provide substantial recreational benefits.

Vineyard Community Plan

The Vineyard Community Plan area is generally bounded by Jackson Highway (SR 16) and Kiefer Boulevard on the north, Calvine Road on the south, Elk Grove–Florin Road on the west, and Grant Line Road and Sunrise Boulevard on the east. The Plan supports open space and recreational opportunities within the plan area. The plan calls for encouraging the development of environmentally compatible recreation facilities and open space areas along stream channels and within floodplains and power transmission easements.

San Joaquin County General Plan

The San Joaquin County General Plan contains a community development element that addresses recreation. In general, there are several objectives that call for the provision of parks and recreational facilities, the promotion of the county's recreational potential, and the protection and preservation of the county's unique recreational resources, such as waterways. The plan also recognizes the importance of providing a countywide system of bicycle facilities for safe and convenient transportation and recreation use.

Amador County General Plan

The Amador County General Plan contains several objectives and policies that call for the maintenance and provision of high quality recreational facilities. The plan encourages recreational development and calls for the protection of the varied resources for public recreation in scenic and historical areas, hunting and fishing areas, lakes and waterways, forests and wilderness, and urban open spaces.

Calaveras County General Plan

The open space element of the Calaveras County General Plan includes a recreational resources section that contains many recreation-related goals and policies. It is the goal of the County to conserve national, state, and regional

recreation areas in the county, to provide adequate local parks and recreation facilities to serve the county's population, and to preserve portions of the county's rivers and streams as a local recreation resource. It is County policy to support public and private entities in their efforts to maintain and improve recreation facilities, balance water resources development with the preservation of streams and rivers in their natural state, and protect public access to streams and rivers.

Environmental Consequences

This section describes the construction- and operation-related impacts on recreation that are expected to occur under each project alternative. The following discussion also includes a description of the methods and assumptions used to conduct the analysis and the criteria for determining the significance of impacts.

Methods and Assumptions

The recreational assessment describes the impacts on recreation as a result of changes in reservoir storage, river flows, and disruption in activities associated with facility construction. The assessment focuses on evaluating impacts on:

- water-dependent (e.g., boating and swimming) and water-enhanced recreation opportunities at the Sacramento River, Folsom Reservoir, Lake Natoma, the lower American River, Camanche Reservoir, Pardee Reservoir, the lower Mokelumne River, the upper Mokelumne River, and other major lakes (i.e., Trinity, Shasta, Oroville);
- recreation activities on the Sacramento River near the intake facility site; and
- recreation areas crossed by project facilities.

Effects on recreation that could occur during construction of various project facilities were evaluated qualitatively. Generally, construction activities could result in a short-term loss of recreation opportunities by disrupting use of recreation areas or facilities. A long-term effect could occur if a recreation opportunity is eliminated as a result of construction activities associated with a project facility.

Impacts on recreation could occur during operation of the various project alternatives. Placement of a project alternative facility that could reduce or eliminate a recreational opportunity was evaluated as an operation-related effect.

Operating the project alternatives could result in changes in reservoir storage and river flows. The resulting change in reservoir storage could change the frequency and duration that lake levels are within acceptable ranges or above the minimum level necessary to conduct recreational activities. Similarly, river

flows could fall outside the ranges necessary to conduct recreation more frequently. The evaluation of effects on water-dependent recreation was conducted by comparing the CALSIM and EBMUDSIM hydrological modeling results for each alternative with the reservoir storage and river flow recreation thresholds. Key opportunity thresholds used in this analysis are shown in Table 6-2.

Table 6-2. Recreation Opportunity Thresholds for Important Recreation Resources

Water Resource	Elevation When Full	Recreation Opportunity Thresholds
Folsom Reservoir	466 msl	360 msl—last boat ramp out of operation 400 msl—limited surface area (boating constrained) 405 msl—marina closes 430 msl—decline in shoreline activities
Shasta Reservoir	1,067 msl	>952msl—at least one boat ramp available on each arm 1,017 msl—limited surface area (boating constrained)
Trinity Lake	2,370 msl	2,170 msl—last boat ramp out of operation 2,320 msl—limited surface area (boating constrained)
Oroville Reservoir	900 msl	710 msl—last boat ramp out of operation 750 msl—limited surface area 819 msl—beaches close
Lower American River	-	SWRCB thresholds: 1,500–2,000 cfs—boating minimum range 3,000–6,000 cfs—boating optimal range 1,250–5,000 cfs—swimming CVPIA thresholds: 1,750–3,000 cfs—boating optimal range 1,750 cfs—minimum boating flows 1,500 cfs—optimal swimming flows Hodge Decision: 1,750 cfs—minimum summer recreation flows
Sacramento River	-	2,500–12,000 cfs—boating optimal range

^a Thresholds are measured in feet above msl for reservoirs and in cfs for rivers.

Sources: California State Water Resources Control Board 1988 (SWRCB opportunity thresholds for the Lower American River),
USFS 2001 (boat ramp opportunity thresholds for Shasta Reservoir),
USFWS et al. 1999 (boat ramp opportunity thresholds for Trinity Lake),
Environmental Defense Fund v. EBMUD 1990 (Hodge Decision),
Bureau of Reclamation 1997 (all other opportunities).

CALSIM was used to evaluate changes at Sacramento River reservoirs, Folsom Reservoir, the lower American River, and the Sacramento River. EBMUDSIM was used to evaluate changes at Pardee and Camanche Reservoirs and the lower Mokelumne River. A detailed discussion of CALSIM and EBMUDSIM is included in Chapter 3, “Hydrology, Water Supply, and Power.”

As described in Chapter 3, “Hydrology, Water Supply, and Power,” changes in storage at other CVP/SWP reservoirs (e.g., Whiskeytown, San Luis, New Melones), Delta flows, and operation of EBMUD terminal reservoirs would be very small and would not affect recreational opportunities at these areas. Therefore, impacts on recreation were not evaluated in detail for these areas.

Significance Criteria

The criteria used for determining the significance of an impact on recreational resources are based on Appendix G of the State CEQA Guidelines (Environmental Checklist) and professional standards and practices. Impacts on both water-dependent and water-enhanced recreation opportunities may be considered significant if implementation of an alternative would:

- cause a change in river flows or lake elevations that would result in substantial changes to existing recreational opportunities,
- locate project facilities that would result in a substantial long-term disruption of any institutionally recognized recreational activities,
- cause an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Less-than-Significant Impacts

Alternative 1

Alternative 1 would not result in any construction-related or operation-related recreation impacts associated with construction of FRWP facilities.

Alternatives 2–5

Alternatives 2 through 5 differ only in the pipeline alignments from the Freeport intake facility to the FSC. Project construction and operation for Alternatives 2 through 5 are very similar. Impacts related to recreation for each alternative differ only slightly from each other; therefore, the results for Alternatives 2 through 5 are presented together but are representative of each individual alternative, unless otherwise noted.

Construction-Related Impacts

Impact 6-1: Temporary Disruption to Recreational Opportunities during Construction of the Freeport Intake Facility

Construction of the intake facility would temporarily disrupt the use of the recreation trail on the top of the left bank of the Sacramento River levee. During construction, the segment of trail through the project area would be closed. Once construction is completed, this portion of the trail would be reconstructed. Significant construction-related effects on recreation occurring at the intake facility site would be avoided because the project sponsors would implement a traffic control plan. As described in Chapter 2 under Environmental Commitments, the traffic control plan will ensure that the public will be notified of the duration of the trail closure and that a safe detour route for the trail will be established either through or around the construction site. The detour route will connect the existing portion of the Pocket area off-street bike trail to the City of Sacramento's planned trail extension. With implementation of the traffic control plan, rerouting of the levee trail would allow continued use of the trail and all other nearby recreation facilities would remain accessible. For safety purposes, there will be short periods of time when construction activities at the intake facility site will require closure of the detour route. However, these closures will be short-term and the traffic control plan will ensure that the public will be notified of the duration of the trail closure. The impact on recreation as a result of temporarily closing the levee trail is considered less than significant.

Also, construction of a bank-type intake facility could result in short-term disruption of water-dependent recreation activities in the Sacramento River near the location of the intake facility site. Use of and access to this portion of the river and all nearby recreation facilities would continue during construction of the intake facility and its auxiliary facilities. The impact on recreation is considered less than significant. No mitigation is required.

Impact 6-2: Temporary Disruption to Recreational Opportunities during Construction of the Pipeline from the Freeport Intake Facility to Zone 40 Surface WTP/FSC

Construction of any of the pipeline alignment alternatives that connect the intake facility with the Zone 40 Surface WTP and the FSC would temporarily disrupt access to recreation facilities. No recreation facilities would be directly affected because none are crossed by the pipeline alignments. As described in Chapter 2, "Project Description" under "Environmental Commitments," the project sponsors have committed to implementing a traffic control plan. This plan will maintain access to recreation facilities along the pipeline alignments during construction. With implementation of the traffic control plan, the impact on recreation as a result of disrupting access to recreation sites is considered less than significant.

Impact 6-3: Temporary Disruption to Recreational Opportunities along the Folsom South Canal

Constructing the connection between the pipeline and the FSC would temporarily disrupt use of the FSC bike trail. Constructing the canal pumping plant and the

connection between the FSC and the FSCC would not disrupt recreation because the area where these improvements would be constructed is closed to the public.

During construction, the segment of the FSC bike trail through the project area would be closed. Once construction is completed, this portion of the trail would be reconstructed. Significant construction-related effects on recreation occurring at the connection would be avoided because the project sponsors would implement a traffic control plan. As described in Chapter 2 under “Environmental Commitments,” the traffic control plan will ensure that the public will be notified of the duration of the trail closure and that a safe detour route for the trail will be established either through the construction site or on adjacent public streets. With implementation of the traffic control plan, the impact on recreation as a result of closing the FSC trail is considered less than significant.

Impact 6-4: Temporary Disruption to Recreational Opportunities during Construction of the Pipeline from the FSC to the Mokelumne Aqueducts

Construction of any of the pipeline alignment alternatives that connect the FSC with the Mokelumne Aqueducts may result in short-term disruption of access to recreation facilities maintained by San Joaquin County and EBMUD. No recreation facilities in Sacramento County would be disrupted by construction of the FSCC pipeline. Construction would temporarily disrupt access to recreation areas and scenic routes (SR 88 and Liberty Road) in San Joaquin County, which are considered as part of the county’s bicycle route system in the San Joaquin County General Plan. Access to the lower Mokelumne River and the north and south shores of the Camanche Reservoir may be disrupted by construction of the pipeline across SR 88, Liberty Road, and SR 12.

All pipeline alignment alternatives would cross the lower Mokelumne River. Impacts on water-dependent and water-enhanced recreation would be avoided by tunneling under the river. The pipeline alignments also cross a large grove of valley oaks south of Camanche Reservoir and SR 12. The San Joaquin County General Plan indicates that this area is a desirable location for a regional park. Construction of the FSCC pipeline would still allow for development of a regional park in this location.

During construction, all recreation facilities would remain accessible and available for use by the public. As described in Chapter 2 under “Environmental Commitments,” the traffic control plan will ensure that roadways remain open during the construction period and that access to recreation sites is maintained. The impact on recreation during construction of the FSCC pipeline is considered less than significant because access to recreation sites would continue and disruption would be short term.

Operation-Related Impacts

Impact 6-5: Change in Water-Dependent and Water-Enhanced Recreation Opportunities at Shasta, Oroville, and Trinity Reservoirs and the Sacramento River

Operation of Alternatives 2 through 5 would result in very small changes in the frequency with which the surface elevation of Shasta, Oroville, or Trinity Reservoirs would fall below levels identified as important water-dependent recreation thresholds. During the peak season, from May to September, the surface elevation of the three reservoirs would fall below the levels at which boating becomes constrained for only three additional months over the 72-year modeling period (see Table 6-3). Operation of the alternatives would also result in a very small change in the frequency with which flows in the Sacramento River are within a range suitable for water-dependent recreation during the peak recreation season (May to September). Flows in the river would fall outside the suitable range for two additional months over the 72-year modeling period (see Table 6-3). The small changes in reservoir surface elevations and river flows would not adversely affect recreation at the Shasta, Trinity, or Oroville Reservoirs or the Sacramento River. The impact on recreation is considered less than significant, and no mitigation is required.

Table 6-3. Comparison of Reservoir Level and River Flow Exceedance Frequencies for Recreation Opportunities at Important Recreation Resources^a

Recreation Threshold	Project Change		
	Base Case Months ^b /Percent ^c	Alternatives 2 through 5 Months ^d /Percent ^c	Alternative 6 Months ^d /Percent ^c
Folsom Reservoir^e			
Peak Season			
360 msl—last boat ramp out of operation	433/98.9	No change	No change
400 msl—limited surface area	386/88.1	-7/86.5	-2/87.7
405 msl—marina closes	361/82.4	-1/82.2	No change
430 msl—decline in shoreline activities	263/60.0	-2/59.6	-2/59.6
Off Season			
360 msl—last boat ramp out of operation	434/99.1	-3/98.4	No change
400 msl—limited surface area	357/81.5	-3/80.8	-1/81.3
Shasta Reservoir^f			
Peak Season			
>952 msl—at least one boat ramp available on each arm	327/89.6	-2/89.0	+1/89.9
1,107 msl—limited surface area	201/55.1	-2/54.5	-4/54.0
Off Season			
>952 msl—at least one boat ramp available on each arm	459/89.8	-3/89.2	+2/90.2

	Project Change		
	Base Case	Alternatives 2 through 5	Alternative 6
	Months ^b /Percent ^c	Months ^d /Percent ^c	Months ^d /Percent ^c
Recreation Threshold			
1,107 msl—limited surface area	307/60.1	No change	-2/59.7
Trinity Reservoir ^f			
Peak Season			
2,170 msl—last boat ramp out of operation	356/97.5	-1/97.3	-1/97.3
2,320 msl—limited surface area	177/48.5	-1/48.2	+1/48.8
Off Season			
2,170 msl—last boat ramp out of operation	478/93.5	+3/94.1	+1/93.7
2,320 msl—limited surface area	213/41.7	-1/41.5	No change
Oroville Reservoir ^f			
Peak Season			
710 msl—last boat ramp out of operation	341/93.4	-3/92.6	-1/93.2
750 msl—limited surface area	312/85.5	No change	-1/85.2
819 msl—beaches close	206/56.4	-2/55.9	No change
Lower American River ^g			
SWRCB thresholds			
1,500-2,000 cfs—boating minimum range	26/7.1	+1/7.4	-1/6.8
3,000-6,000 cfs—boating optimal range	142/38.9	+4/40.0	+1/39.2
1,250-5,000 cfs—swimming	290/79.5	+3/80.3	+1/79.7
CVPIA thresholds			
1,750-3,000 cfs—boating optimal range	123/33.7	-3/32.9	-1/33.4
1,750 cfs—minimum boating flows	288/78.9	+1/79.2	No change
1,500 cfs—optimal swimming flows	-	-	-
Hodge Decision			
1,750 cfs—minimum summer recreation flows	180/61.6	+1/62.0	No change
Sacramento River ^h			
2,500-12,000 cfs—boating optimal range	269/73.7	-2/73.2	-1/73.4

	Project Change		
	Base Case	Alternatives 2 through 5	Alternative 6
Recreation Threshold	Months ^b /Percent ^c	Months ^d /Percent ^c	Months ^d /Percent ^c
^a Project changes under Alternatives 2 through 5 and Alternative 6 are based on a comparison with the Base Case (conditions under the 72-year hydrologic period).			
^b Number of months the reservoir level is above indicated threshold or river flows are above indicated threshold or inside of indicated range.			
^c Percent of time lake level is above indicated threshold or river flows are above indicated threshold or inside of indicated range.			
^d Change in number of months above or below threshold or inside indicated range compared to Base Case: + additional months above threshold or inside of indicated range, - fewer months above threshold or inside indicated range.			
^e The peak season extends from April to September (432 months over the 72-year hydrologic period) and the off season extends from October to March (432 months over the 72-year hydrologic period).			
^f The peak season extends from May to September (360 months over the 72-year hydrologic period) and the off season extends from October to April (504 months over the 72-year hydrologic period).			
^g Exceedance frequencies are for the peak recreation season, which extends from May to September (360 months over the 72-year hydrologic period), except for Hodge Decision summer recreation flows which extends from July to October (288 months over the 72-year hydrologic period).			
^h Exceedance frequencies are for the peak recreation season, which extends from May to September (360 months over the 72-year hydrologic period).			

Impact 6-6: Change in Water-Dependent and Water-Enhanced Recreation Opportunities at Folsom Reservoir

Operation of Alternatives 2 through 5 would result in very small changes in the frequency with which the surface elevation of Folsom Reservoir would fall below important water-dependent and water-enhanced recreation thresholds (Table 6-3). Over the 72-year modeling period, the surface elevation of the reservoir would fall below the levels at which boating becomes constrained for 7 additional months during the peak season (April to September). However, these months are not sequential and the average change in surface elevation is 2 feet below the recreation threshold. Also during the peak season, the operation of the Brown’s Ravine Marina would be restricted for only 1 additional month and the elevation at which shoreline use declines becomes constrained for only 2 additional months. The surface elevation of the reservoir would fall below the levels at which boating becomes constrained for only 3 additional months over the 72-year modeling period during the off-season (October to March). The small change in the surface elevation of Folsom Reservoir would not substantially affect water-dependent or water-enhanced recreation. The impact on recreation is considered less than significant, and no mitigation is required.

Impact 6-7: Change in Water-Dependent Recreation Opportunities on the Lower American River

Operation of Alternatives 2 through 5, would result in very small changes in the frequency with which flows in the American River would fall below or outside

important water-dependent and water-enhanced recreation thresholds (Table 6-3). Flows during the peak recreation season, from May to September, would fall outside of the range identified in the CVPIA as best for boating for only 3 additional months over the 72-year modeling period. In fact, flows would more frequently exceed the minimum flows identified in the Hodge Decision as the minimum to maintain recreation on the river and more frequently fall within the SWRCB's desired ranges for boating and swimming. The very small change in flows would not substantially affect water-dependent or water-enhanced recreation occurring on or adjacent to the river. The impact on recreation is considered less than significant, and no mitigation is required.

Impact 6-8: Disruption to Recreation Opportunities on the Sacramento River Associated with Location of the Freeport Intake Facility

The Pocket area off-street bike trail that currently exists on top of the river levee would traverse through the location of the intake facility. Upon construction completion, the trail would be reestablished to continue access and provide recreational opportunities for bicyclists and pedestrians. The trail would remain on the levee top, and the chain link fencing surrounding the intake facility would be aligned to parallel the levee trail to facilitate through-access to the levee crown. Maintaining the bike trail would also continue to allow for the proposed development of a continuation of the Pocket area off-street bike trail, such as the City of Sacramento's planned extension of the trail to the Freeport Youth Sports Complex, and possible connection to other recreation facilities. Also, access to the river and parkway would be reestablished and the amount of riverbank modified by locating the intake facility at this site would not substantially affect recreation along the parkway. This impact is less than significant.

Location of the intake facility is in an area designated as a proposed major access point to the bike trail (Freeport Reservoir) in the Sacramento River Parkway Plan and a major parkway recreation node in the Pocket Area Community Plan. The proposed recreation access point would include restrooms, drinking fountain, parking and bicycle-staging area, and a bridge over Freeport Boulevard accessing the Freeport Shores Youth Sports Complex. Intake facilities would be located on the river side of the levee and in the northern portion of the site. Although the intake facility would fall within the area proposed as a major access point, adequate land would remain available to accommodate the proposed recreation development. In addition, other existing and proposed recreation facilities (from 0.5 to 2 miles away from the intake facility location) would provide similar access to the bike trail as proposed at the Freeport site. The intake facility would not adversely affect access to the bike trail. The impact on recreation is considered less than significant, and no mitigation is required.

Impact 6-9: Potential Inconsistency with Local Plans and Policies Addressing Recreation

Local plans and polices provide for the protection and enhancement of recreation opportunities within City of Sacramento, Sacramento County, and San Joaquin County. They establish goals and policies that address maintaining and enhancing access to the Sacramento River, open space, and recreation facilities.

The project would result in the limited short-term disruption of access to a small segment of the Sacramento River. However, the project would not conflict with plans to provide enhanced access to the reach of the river near the intake facility. The pipeline alignments would follow existing right-of ways and would not conflict with policies to provide recreation facilities or access to open space. The construction and operation of Alternatives 2 through 5 would not conflict with the goals of the plans and policies to provide recreation.

Alternative 6

As described in Chapter 2, “Project Description,” Alternative 6 consists of enlarging Pardee Reservoir and conveying water from the Sacramento River. Alternative 6 includes the following project components: enlarge Pardee Reservoir (which includes additional components), Freeport intake facility, pipeline from intake facility to the Zone 40 Surface WTP, and the Zone 40 Surface WTP. Though slightly different in size, the Freeport intake facility, pipeline from the intake facility to the Zone 40 Surface WTP, and the Zone 40 Surface WTP project components are the same as those that make up Alternative 5. Therefore, several of the impacts associated with Alternative 5 (described above) are also associated with Alternative 6 and are restated below. Additionally, impacts associated with the enlarge Pardee Reservoir component of this alternative are described below.

Construction-Related Impacts

Impact 6-10: Temporary Disruption to Recreational Opportunities during Construction of the Intake Facility

The disruption to recreational opportunities associated with construction of the intake facility would be the same to that described above for Alternatives 2 through 5. This impact is less than significant.

Impact 6-11: Temporary Disruption to Recreational Opportunities during Construction of the Pipeline from the Freeport Intake Facility to the Zone 40 Surface Water Treatment Plant

The disruption to recreational opportunities associated with construction of the pipeline would be the same as that described above for Alternatives 2 through 5. This impact is less than significant.

Impact 6-12: Temporary Disruption of Whitewater Use along the Electra Run near State Route 49

Construction of the new SR 49 bridge would result in temporary disruption to whitewater recreation in the reach of the upper Mokelumne River near the existing SR 49 bridge. Construction of the bridge would not impede boaters from passing through the construction site and continuing downstream to the existing SR 49 take-out or the Middle Bar Bridge take-out. Because the new bridge would be constructed upstream of the existing bridge, the existing SR 49 bridge take-out would remain available to boaters. Boaters not choosing to boat

through the construction site can use an existing take-out approximately ½ mile upstream from the SR 49 bridge. The impact on whitewater boating is considered less than significant, and no mitigation is required.

Impact 6-13: Temporary Disruption of Water-Dependent Recreation Activities near Pardee Dam

Breaching the existing Pardee Dam after the new dam is completed and filling the reservoir could result in disruption of water-dependent recreation near the existing dam. The disruption of recreation activities would only occur, within this small portion the reservoir's surface area, between April and October of the fourth year of construction. Therefore, these temporary construction activities would have little effect on reservoir recreation activities. This impact is less than significant. No mitigation is required.

Impact 6-14: Temporary Disruption to Water-Dependent and Water-Enhanced Recreation Activities on Pardee Reservoir

The existing Pardee Recreation Area would be decommissioned and removed before project construction starts, and a new recreation area would be located above the new inundation zone before construction of the new dam begins. Relocating the recreation area would allow recreation to continue on the reservoir during the construction period. Also, the new boat ramp and marina would be developed to extend from the shoreline of the new, enlarged reservoir to an elevation below the existing water line. This new ramp and marina will accommodate water-dependent recreation activities during the construction period. Therefore, the impact on water-dependent and water-enhanced recreation during project construction is considered less than significant. No mitigation is required.

Operation-Related Impacts

Impact 6-15: Change in Water-Dependent and Water-Enhanced Recreation Opportunities at Shasta, Oroville, and Trinity Reservoirs and the Sacramento River

Operation of Alternative 6 would result in very small changes in reservoir level and river flow exceedance frequencies for important recreation opportunities at Shasta, Oroville, and Trinity Reservoirs and the Sacramento River (shown in Table 6-3). During the peak season, from May to September, the surface elevation of the three reservoirs would fall below the levels at which boating becomes constrained for only 4 additional months over the 72-year modeling period. Flows in the Sacramento River would fall outside the suitable range for only 1 additional month during the peak season, from May to September, over the 72-year modeling period. The surface elevations of all three reservoirs and the river flows for Alternative 6 fall below the recreation threshold levels less frequently, at the same frequency, or no more than 2 additional months in comparison to the changes associated with Alternatives 2 through 5. The impact on water-dependent and water-enhanced recreation opportunities is considered less than significant, and no mitigation is required.

Impact 6-16: Change in Water-Dependent and Water-Enhanced Recreation Opportunities at Folsom Reservoir

Operation of Alternative 6 would result in very small changes in the frequency with which the surface elevation of Folsom Reservoir would fall below important water-dependent and water-enhanced recreation thresholds. As shown in Table 6-3, during peak and off-season periods, the surface elevation of the reservoir would fall below recreation thresholds no more than 2 additional months over the 72-year hydrologic period. Overall, these surface elevation changes would occur less frequently than the changes described for Alternatives 2 through 5. The impact on water-dependent and water-enhanced recreation opportunities is considered less than significant, and no mitigation is required.

Impact 6-17: Change in Water-Dependent Recreation Opportunities on the Lower American River

Operation of Alternative 6 would result in very small changes in the frequency with which flows in the American River would fall below or outside important water-dependent and water-enhanced recreation thresholds (Table 6-3). For all of the ranges identified as best for boating and swimming, flows during the peak recreation season would fall outside these ranges no more than 1 additional month over the 72-year modeling period. Overall, the frequency in which flows fall outside of threshold levels for Alternative 6 more closely parallels the base case conditions than the changes described for Alternatives 2 through 5. The impact on water-dependent and water-enhanced recreation opportunities occurring on and along the lower American River is considered less than significant, and no mitigation is required.

Impact 6-18: Disruption to Recreation Opportunities on the Sacramento River Associated with Location of the Intake Facility

The disruption to recreational opportunities on the Sacramento River associated with the location of the intake facility alternatives would be the same as that described for Alternatives 2 through 5. This impact is less than significant.

Impact 6-19: Change in Water-Dependent Recreation Opportunities on Pardee Reservoir

The storage capacity of the enlarged Pardee Reservoir would increase by approximately 172,000 af compared to the current reservoir capacity and existing water levels would be raised by 33 feet during most months. When full (601 feet above msl) the surface area of the reservoir would increase from 2,250 acres to 3,480 acres. The larger surface area is expected to benefit water-dependent recreation opportunities occurring at the reservoir. This impact is considered beneficial. No mitigation is required.

Impact 6-20: Change in Recreation Opportunities at Camanche Reservoir

As described in Chapter 3, “Hydrology, Water Supply, and Power,” operation of the enlarged Pardee Reservoir may result in greater end-of-year storage in Camanche Reservoir. Increasing storage could benefit water-dependent and water-enhanced recreation occurring at Camanche Reservoir. Operation of the

enlarged Pardee Reservoir would not adversely affect recreation occurring at Camanche Reservoir.

Impact 6-21: Change in Recreation Opportunities on the Lower Mokelumne River

As described in Chapter 3, “Hydrology, Water Supply, and Power,” operation of the enlarged Pardee Reservoir may result in greater end-of-year storage in Camanche Reservoir and higher releases to the Mokelumne River. Increasing releases could benefit water-dependent and water-enhanced recreation occurring on the river by improving flow conditions for boating and the river’s fishery. Operation of the enlarged Pardee Reservoir would not adversely affect recreation occurring on or along the lower Mokelumne River.

Impact 6-22: Inundation of Pardee Recreation Area

The existing Pardee Recreation Area would be inundated by the enlarged reservoir. Commensurate with construction, the existing facilities would be decommissioned and removed, and a new recreation area would be constructed above the new shoreline of the reservoir on 116 acres along the western shore of the reservoir’s southern arm (shown in small scale in Figure 2-3 and shown in large scale in Figure 2-14). The new recreation area would provide an in-kind replacement for the loss of facilities at the existing Pardee Recreation Area in addition to providing some new amenities. The inundation and relocation of the Pardee Recreation Area would result in a less-than-significant impact on recreation opportunities at the reservoir.

Impact 6-23: Inundation of Middle Bar Bridge

The Middle Bar Bridge would be removed because it would be inundated at a reservoir elevation of 575 feet above msl and would result in a hazard to navigation if left in place. Fishing piers would be constructed on the south and north sides of the reservoir near the ends of Gwin Mine Road and Middle Bar Road with a turnaround and parking area constructed at the end of each road (see Figure 2-3). The fishing piers would compensate for the loss of fishing access to the upper portion of the reservoir currently provided by Middle Bar Bridge. The impact on recreation as a result of the loss of the Middle Bar Bridge is considered less than significant, and no mitigation is required.

Impact 6-24: Consistency with Local Plans and Policies Addressing Recreation

Local plans and policies provide for the protection and enhancement of recreation opportunities within Amador and Calaveras Counties. Both the Amador and Calaveras County General Plans support the protection and enhancement of recreation. Under Alternative 6, new recreation facilities will be constructed at Pardee Reservoir that would maintain and enhance recreation activities occurring at the reservoir. Construction would not conflict with recreation being provided at the reservoir. The construction and operation of Alternative 6 would not conflict with the goals of the general plans relative to recreation.

Significant Impacts and Mitigation Measures

There are no significant construction-related or operation-related impacts on recreation associated with Alternatives 1 through 5.

Alternative 6

Construction-Related Impacts

No significant construction-related impacts on recreation are associated with this alternative.

Operation-Related Impacts

Impact 6-25: Inundation of a Segment of the Mokelumne Coast to Crest Trail

The elevation of a segment of the Mokelumne Coast to Crest Trail is lower than both the proposed normal storage elevation of 601 feet above msl and the flood event storage elevation of 614 feet above msl. The lowest point of this segment of the trail crosses McAffee Gulch at an elevation of approximately 600 feet msl, and a segment approximately 0.5 mile long within the gulch is lower than 614 feet above msl. In addition, a 0.3-mile-long segment of the trail near the Wildermuth House is lower than 614 feet msl. Inundation of these segments of the trail would prevent access to more than half of the remaining length of the trail and would significantly impact use of this trail for hiking and equestrian purposes. Implementation of the following mitigation measure will reduce this impact to less than significant.

Mitigation Measure 6-1: Relocate a Portion of the Mokelumne Coast to Crest Trail

The trail segments near McAffee Gulch and the Wildermuth House that are currently below 614 feet msl will be relocated to a higher elevation. Rerouting these trail segments, which total approximately 0.8 mile, above 614 feet msl would allow for continued year-round use of the trail and staging areas.

Impact 6-26: Loss of Whitewater Boating on the Upper Mokelumne River between the Middle Bar Bridge and State Route 49 Bridge

Enlarging Pardee Reservoir will allow dam operators to store water up to an elevation of 614 feet above msl for flood control purposes and up to 601 feet above msl for water supply purposes. As indicated in Chapter 3, "Hydrology, Water Supply, and Power," the surface elevation of the enlarged reservoir would be maintained at 601 feet during most months. The additional flood control space (601–614 feet above msl) would be used only during extremely large and infrequent flood events.

This 2-mile-long section of moving water between the SR 49 bridge and the Middle Bar Bridge includes a series of rapids for whitewater boating. By raising the reservoir elevation to 601 feet above msl, the segment of the upper

Mokelumne River between the SR 49 bridge and the Middle Bar Bridge would be inundated during normal operations and water-based public access would not be allowed below the extent of the reservoir's full pool (approximately the SR 49 bridge). Therefore, the impact would result in the loss of this river section as a whitewater boating recreation resource. Though the Electra Run is the main whitewater attraction along this area of the upper Mokelumne River, many boaters continue downstream along this section of river to lengthen the Electra Run from about 3 miles to approximately 5 miles. The loss of approximately 2 miles of moving water and the regional importance of this segment of the river would be considered a significant and unavoidable impact on whitewater recreation. There is no mitigation.

Impact 6-27: Inundation of the New Middle Bar Take-Out Facility

The 2-acre Middle Bar Take-Out Facility extends from the current shore of the river inland to an approximate elevation of 600 feet above msl. Enlarging the reservoir to an elevation of 601 feet above msl during most months and providing flood control storage up to 614 feet above msl would result in partial inundation of this new facility.

As stated above under Impact 6-26, the 2-mile-long section of river between the SR 49 bridge and Middle Bar Bridge would no longer be available to boaters for whitewater use. Therefore, inundation and loss of the boating take-out and pedestrian path between the parking area and take-out area would be superseded by the loss of the 2-mile-long river section.

However, inundation of the new facility's parking area and support amenities used by anglers and other recreationists would affect access to this area of the river, especially for anglers who would use the proposed fishing piers for mid-channel fishing opportunities and would continue to use the shore for fishing. This impact is significant. Implementation of the following mitigation measure will reduce this impact to less than significant.

Mitigation Measure 6-2: Replacement of Necessary Middle Bar Take-Out Facility Amenities

As part of the project description (see Chapter 2), FRWA will construct new fishing piers and turnaround areas at the ends of Gwin Mine Road and Middle Bar Road above the high water level on both sides of the reservoir. Therefore, the necessary amenities of the Middle Bar Take-Out Facility can be relocated and constructed above the high water level at the Middle Bar Road turnaround area. The following amenities will be relocated for continued use on this section of the river:

- the gravel-surfaced parking area for approximately 20 to 25 vehicles, including one space designated for the disabled;
- the ADA-compliant two-stall vault toilet facility, as well as trash and recycling receptacles;
- the pedestrian path to the new fishing piers from the parking facility for anglers; and

- the appropriate signage and fencing to support the use and facilities as well as to protect the environment, including an information board in the parking area with rules and safety information.

Impact 6-28: Loss of Whitewater Boating on the Upper Mokelumne River Electra Run

Enlarging Pardee Reservoir will allow dam operators to store water up to an elevation of 614-feet above msl for flood control purposes and up to 601-feet above msl for water supply purposes. As indicated in Chapter 3, “Hydrology, Water Supply, and Power,” the surface elevation of the enlarged reservoir would be maintained at 601 feet during most months. The additional flood control space (601–614 feet above msl) would be used only during extremely large and infrequent flood events.

By raising the reservoir elevation to 601 feet above msl, a 0.5-mile segment of the river upstream of the SR 49 bridge would be inundated during normal reservoir operations. This portion of the Electra Run includes Class II moving water, one Class II+ rapid, the SR 49 bridge take-out, and the take-out 0.5 mile upstream from the SR 49 bridge. Therefore, this 0.5-mile segment of river would be closed to whitewater boating recreation.

Operation of Pardee Reservoir for flood control purposes and inundating the area between 601 and 614 feet above msl would not adversely affect white-water recreation on the upper Mokelumne River because such an occurrence would be very infrequent and of short duration. Storing water up to 601 feet above msl would result in a significant unavoidable impact on whitewater recreation because of the regional importance of this segment of the river and the loss of approximately 0.5 mile of moving water, the take-out at the SR 49 bridge, and the take-out 0.5 mile upstream from the SR 49 bridge. Mitigation would reduce this impact, but not to a less-than-significant level.

Mitigation Measure 6-3: Ensure Availability of a Take-Out on the Electra Run

To reduce the impact on whitewater recreation, but not to a less-than-significant level, FRWA will ensure that the take-out 0.5 mile upstream of the SR 49 bridge remains usable. In the event that this take-out is not usable, a new take-out will be developed just upstream from the existing take-out.

Cumulative Impacts

Methods and Assumptions

Methods and assumptions for the cumulative effects analysis are essentially identical to those described for the project alternatives analysis.

Cumulative impacts were evaluated for those conditions where the proposed project alternatives may contribute to cumulatively significant impacts, in

combination with past, present, or reasonably foreseeable future conditions. The California water supply and demand conditions are a primary factor of future water-dependent and water-enhanced recreation conditions within the project area. Chapter 3, “Hydrology, Water Supply, and Power,” describes the analysis conducted with CALSIM II and EBMUDSIM water supply models to estimate hydrological conditions. The cumulative scenarios of the alternative project facilities were modeled assuming the 2020 level of system development and 2020 demands. The cumulative scenarios reflect only changes to the systemwide level of development. The cumulative impacts are assessed as the difference between the cumulative project alternative scenarios and the 2001 no action conditions (Alternative 1). However, a 2020 no action scenario was used to determine the incremental effects of the project alternatives under cumulative conditions.

Construction-related effects are described earlier in this chapter and would not contribute to any cumulative recreation effects relative to 2020 conditions.

Results

Table 6-4 shows CALSIM and EBMUDSIM results for cumulative conditions with Alternatives 2–5 and Alternative 6 for Folsom Reservoir, Shasta Reservoir, Trinity Reservoir, Oroville Reservoir, Lower American River, and Sacramento River. As described above, the cumulative effects are represented by the difference between 2020 conditions with the project alternatives and the 2001 no action conditions. The incremental changes potentially attributable to the project alternatives are represented by the difference between the simulated 2020 conditions with the project alternatives and the 2020 no action conditions. The data indicate that recreational opportunities under 2001 no action conditions and 2020 no action conditions are similar. The pattern of recreational opportunities changes, with reductions in opportunities for some months and years and increases in other months and years. In general, as shown in Table 6-4, reservoir level and river flow exceedance frequencies are somewhat lower under future (2020) conditions. However, in all cases, the effects of the project alternatives are minor, and in many cases beneficial, and clearly do not meet the threshold of being cumulatively considerable. The incremental changes associated with the project alternatives are discussed more specifically below.

The incremental effects of project operations for Alternatives 2–5 under cumulative conditions would result in very small changes in the frequency with which the surface elevation of Shasta, Trinity, Oroville, and Folsom Reservoirs would fall below important water-dependent and water-enhanced recreation thresholds (Table 6-4). Over the 72-year hydrologic period, the surface elevations of the four reservoirs would fall below the identified important recreation thresholds for an average of only two additional months during the peak season (April to September for Folsom Reservoir, May to September for Shasta, Trinity, and Oroville Reservoirs). Though the surface elevation of Shasta Reservoir would fall below the levels at which boat ramps are available an additional 6 months over the 72-year hydrologic period, these months are not

sequential, and the average change in surface elevation is 3 feet below the recreation threshold. The small change in reservoir surface elevations would not adversely affect recreation at Shasta, Trinity, Oroville, or Folsom Reservoir. This impact is less than significant, and no mitigation is required.

The incremental effects of project operations for Alternatives 2–5 under cumulative conditions would result in very small changes in the frequency with which flows in the Sacramento and lower American River would fall below or outside important water-dependent and water-enhanced recreation thresholds (Table 6-4). Flows in the Sacramento River would fall outside the suitable range for boating for only two additional months during the peak season, from May to September, over the 72-year modeling period. Flows in the lower American River more frequently would fall within the SWRCB’s desired ranges for boating and swimming, more frequently exceed the minimum flows identified in the CVPIA as best for boating, and more frequently exceed the minimum flows identified in the Hodge Decision as the minimum to maintain recreation on the river. The very small change in Sacramento River and lower American River flows would not substantially affect water-dependent or water-enhanced recreation occurring on or adjacent to the rivers. The impact on recreation is considered less than significant, and no mitigation is required.

Under Alternative 6, project operations in combination with ongoing and future (year 2020) water supply operations would result in small changes in the frequency with which the surface elevation of reservoirs and the flows of rivers are within acceptable ranges or above the minimum level necessary to conduct recreational activities. Overall, the pattern of the Alternative 6 project-related contribution to cumulative changes is similar to that described for cumulative conditions under the scenario for Alternatives 2–5 (Table 6-4). In most cases, the surface elevation and river flow changes for the various recreational resources would occur less frequently or at the same frequency as the changes described for Alternatives 2–5.

Table 6-4. Comparison of Reservoir Level and River Flow Exceedance Frequencies for Recreation Opportunities at Important Recreation Resources: Alternatives 2–6 at a 2020 Level of Development^a

Recreation Threshold	2001 No Action/ Base Case ^b	2020 Alternatives 2–5 ^b	2020 Alternative 6 ^b	2020 No Project/ Base Case ^b	2020 Change Alternatives 2–5 ^c	2020 Change Alternative 6 ^c	2020 Change Alternatives 2–5 ^d	2020 Change Alternative 6 ^d
Folsom Reservoir^e								
Peak Season								
360 msl—last boat ramp out of operation	433	430	431	432	-2	-1	-0.4	-0.2
400 msl—limited surface area	386	373	374	375	-2	-1	-0.4	-0.2
405 msl—marina closes	361	351	353	355	-4	-2	-1.0	-0.5
430 msl—decline in shoreline activities	263	249	250	250	-1	0	-0.3	0.0
Off Season								
360 msl—last boat ramp out of operation	434	432	434	434	-2	0	-0.5	0.0
400 msl—limited surface area	357	348	350	351	-3	-1	-0.6	-0.2
Shasta Reservoir^f								
Peak Season								
>952 msl—at least one boat ramp available on each arm	327	321	327	327	-6	0	-1.7	0.0
1,107 msl—limited surface area	201	185	185	185	0	0	0.0	0.0
Off Season								
>952 msl—at least one boat ramp available on each arm	459	456	456	456	0	0	0.0	0.0
1,107 msl—limited surface area	307	283	284	283	0	+1	0.0	+0.2
Trinity Reservoir^f								
Peak Season								
2,170 msl—last boat ramp out of operation	356	364	364	364	0	0	0.0	0.0
2,320 msl—limited surface area	177	155	159	158	-3	+1	-0.8	+0.3

Table 6-4. Continued

Recreation Threshold	2001 No Action/ Base Case ^b	2020 Alternatives 2-5 ^b	2020 Alternative 6 ^b	2020 No Project/ Base Case ^b	2020 Change Alternatives 2-5 ^c	2020 Change Alternative 6 ^c	2020 Change Alternatives 2-5 ^d	2020 Change Alternative 6 ^d
Off Season								
2,170 msl—last boat ramp out of operation	478	502	503	504	-2	-1	-0.4	-0.2
2,320 msl—limited surface area	213	201	200	200	+1	0	+0.2	0.0
Oroville Reservoir^f								
Peak Season								
710 msl—last boat ramp out of operation	341	336	338	339	-3	-1	-0.8	-0.3
750 msl—limited surface area	312	305	304	305	0	-1	0.0	-0.3
819 msl—beaches close	206	203	202	203	0	-1	0.0	-0.3
Lower American River^g								
SWRCB thresholds								
1,500-2,000 cfs—boating minimum range	26	16	16	16	0	0	0.0	0.0
3,000-6,000 cfs—boating optimal range	142	108	105	107	+1	-2	+0.3	-0.5
1,250-5,000 cfs—swimming	290	269	268	268	+1	0	+0.3	0.0
CVPIA thresholds								
1,750-3,000 cfs—boating optimal range	123	141	145	141	0	+4	0.0	+1.1
1,750 cfs—minimum boating flows	288	267	268	266	+1	+2	+0.3	+0.5
1,500 cfs—optimal swimming flows	-	-	-	-	-	-	-	-
Hodge Decision								
1,750 cfs—minimum summer recreation flows	180	161	162	160	+1	+2	+0.3	+0.7
Sacramento River^h								
2,500-12,000 cfs—boating optimal range	269	283	283	285	-2	-2	-0.6	-0.6

Recreation Threshold	2001 No Action/ Base Case ^b	2020 Alternatives 2-5 ^b	2020 Alternative 6 ^b	2020 No Project/ Base Case ^b	2020 Change Alternatives 2-5 ^c	2020 Change Alternative 6 ^c	2020 Change Alternatives 2-5 ^d	2020 Change Alternative 6 ^d
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Notes:

- ^a Project changes under Alternatives 2 through 5 and Alternative 6 are based on a comparison with the Base Case (conditions under the 72-year hydrologic period).
- ^b Number of months the reservoir level is above indicated threshold or river flows are above indicated threshold or inside of indicated range.
- ^c Change in number of months lake level or river flows are above or below threshold or inside indicated range compared to 2020 No Project/Base Case: + additional months above threshold or inside of indicated range, - fewer months above threshold or inside indicated range.
- ^d Change in percentage of time lake level is above indicated threshold or river flows are above indicated threshold or inside of indicated range compared to 2020 No Project/Base Case.
- ^e The peak season extends from April to September (432 months over the 72-year hydrologic period) and the off season extends from October to March (432 months over the 72-year hydrologic period).
- ^f The peak season extends from May to September (360 months over the 72-year hydrologic period) and the off season extends from October to April (504 months over the 72-year hydrologic period).
- ^g Exceedance frequencies are for the peak recreation season, which extends from May to September (360 months over the 72-year hydrologic period), except for Hodge Decision summer recreation flows which extends from July to October (288 months over the 72-year hydrologic period).
- ^h Exceedance frequencies are for the peak recreation season, which extends from May to September (360 months over the 72-year hydrologic period).