APPENDIX I

DRAFT RECREATION MANAGEMENT PLAN

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State of California
The Resources Agency
Department of Water Resources

RECREATION MANAGEMENT PLAN

DRAFT

Oroville Facilities
FERC Project No. 2100

January 2005

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RECREATION MANAGEMENT PLAN

DRAFT

Oroville Facilities
FERC Project No. 2100

January 2005

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EXECUTIVE SUMMARY

The California Department of Water Resources (DWR) has prepared this draft Recreation Management Plan (RMP) as a component of its Application for a new Federal Energy Regulatory Commission (FERC) License to operate the Oroville Facilities (FERC Project No. 2100 or project). The Oroville Facilities are located on the Feather River at the foothills of the Sierra Nevada mountains in Butte County, California and include Lake Oroville, the second largest reservoir in California and the primary water storage facility of the State Water Project (SWP). Lake Oroville and three other project reservoirs, as well as the Feather River, provide numerous water supply, power generation, and flood control benefits. In addition, the Lake Oroville State Recreation Area, Oroville Wildlife Area, and other lands managed by the U.S. Forest Service (USFS) and U.S. Bureau of Land Management (BLM) provide a variety of recreational opportunities, including a number of developed day use and overnight facilities, multiple-use trails, boating facilities, and primitive use areas within the project area. This draft RMP focuses on these water- and reservoir-based recreation resources within the FERC project boundary that are under authority of DWR as the licensee of the Oroville Facilities.

The purpose of the draft RMP is to guide and facilitate the management of existing and future recreation resources associated with the Oroville Facilities. The draft RMP provides a vision of the desired future condition for recreation resources in the project area, establishes long-term goals and objectives for managing recreation resources in the project area, and identifies both site-specific and programmatic recreation measures to be implemented over the term of the anticipated new license. Several programs are presented in the draft RMP that implement these proposed measures. The cost estimates herein are preliminary and were performed at a general reconnaissance level. While the proposed measures and actions identified in the Draft RMP reflect the Licensee's recreation resource goals in the new license, the dollar amounts are not a specific or actual funding level commitment.

Taken as a whole, the draft RMP represents a single "umbrella" protection, mitigation, and enhancement (PME) measure for recreation resources in the project area. The draft RMP is intended to be specific to DWR's recreation resource roles and responsibilities for the term of the new FERC license. The draft RMP does not make management or resource commitments for other entities such as federal and State agencies, Tribes, or other stakeholders. However, the continued active involvement of these other recreation participants in the project area is important in helping to meet the overall recreation needs of all visitors and area residents during the term of the new license. As such, continued coordination and cooperation with these participants will continue as defined in the draft RMP.

In preparation for development of this draft RMP, DWR conducted a series of extensive recreation resource and related studies to assess and evaluate existing and potential future recreation resources associated with the Oroville Facilities. This draft RMP is the

culmination of the results of those studies and is intended to relate most comprehensively to Relicensing Study R-17 – *Recreation Needs Analysis*. This draft RMP complies with FERC's regulations per 18 CFR 4.51(f)(5) and includes the following components:

- Description of the existing recreation facilities of the project that will be continued as project-related facilities during the new license term.
- Identification of existing facilities to be rehabilitated.
- Proposed new facilities and enhancement of existing facilities to meet existing or new recreation needs.
- A schedule for development or rehabilitation of all facilities.
- Identification of entities that will construct, maintain, and operate the facilities.
- An estimate of the costs of construction, operation, and maintenance of the facilities.
- Drawings of each recreation site illustrating existing and proposed facilities, as applicable.
- Descriptions of programs and/or plans for public interpretation and education.
- A plan for monitoring the use and condition of recreation facilities.
- A plan for the periodic review, and revision as necessary, of the RMP.

This draft RMP is in effect an implementation guide to plan, design, construct, renovate, monitor, fund, operate, and maintain existing and future public recreation facilities and programs in the project area. The activities identified are to be utilized throughout the term of the anticipated new license (up to 50 years).

DWR, with stakeholder input, has identified a number of proposed actions and enhancements to help meet existing and future recreation needs (see Appendix A of this draft RMP for a listing) that are associated with the Oroville Facilities. Future recreation needs, such as development of additional campground capacity at several locations, have also been defined. These needs will be validated in the future through periodic monitoring of public recreation facility use, capacity, and condition. To accomplish this purpose and to incorporate actions from the Settlement Agreement process, several RMP activity areas or programs are included in this draft RMP:

- A *Recreation Facility Development Program* that defines DWR's construction-related responsibilities to address existing and future project-related recreation needs, identifies proposed recreation development projects, provides estimated costs and scheduling for these recreation measures, identifies locations and provides conceptual layouts of the development measures, and discusses general facility development standards and design criteria to be used.

- A *Recreation Operations and Maintenance (O&M) Program* that defines DWR's existing and future recreation facility O&M responsibilities. This

program addresses existing and future project-related O&M recreation needs, provides estimated costs for annual O&M, and discusses general facility and use area maintenance standards to be used. Other programmatic costs are also defined for draft RMP implementation such as law enforcement. Anticipated agreements are mentioned that will be entered into between DWR and other entities to provide for O&M at DWR-responsible recreation facilities.

- A *Recreation Monitoring Program* that defines how DWR will conduct recreation resource monitoring and how the monitoring information will be used in decision-making. This program discusses periodic monitoring and reporting responsibilities and identifies a decision-making framework related to when new facility construction would be triggered or initiated.

- A *Resource Integration and Coordination Program* that defines how DWR will integrate recreation resource needs with other resource management needs over time, such as cultural, wildlife, and aquatic resources. This program discusses how parallel resource management programs and actions will be coordinated and information distributed.

- A *Plan Review and Revision Program* that defines how the draft RMP will be updated or revised over the term of the new license. RMP revisions may be based on results from monitoring and coordination meetings with other recreation providers in the project area.

- An *Interpretation and Education (I&E) Program* that defines how hydroelectric energy production, environmental, cultural, and informational interpretation and education will be coordinated and conducted by DWR at project facilities. This program involves several resource areas including recreation, aesthetics/visual, fisheries, water quality, terrestrial, geology, and cultural/historical. The basis for the I&E Program will be DWR's and the California Department of Parks and Recreation (DPR) extensive existing resources; specifically, coordination of existing Lake Oroville Visitors Center programs and staff with new and existing programs administered by DWR's Public Affairs Office (formerly the Office of Water Education) and DPR's Interpretation and Education Division. This program will be aimed at project facilities but will be coordinated with other local recreation service and regional marketing providers (e.g., Feather River Recreation and Park District (FRRPD), City of Oroville, City of Paradise, Butte County, and Oroville Chamber of Commerce).

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities
af	acre-feet
ATV	all-terrain vehicle
BBQ	barbecue
BIA	Bureau of Indian Affairs
BIC	boat-in campground
BISC	Boating Information and Safety Center
BLM	U.S. Bureau of Land Management
BR	boat ramp
Caltrans	California Department of Transportation
car-top BR	car-top boat ramp
CDEC	California Data Exchange Center
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulation
CHP	California Highway Patrol
CPR	cardiopulmonary resuscitation
CSU	California State University
CVP	Central Valley Project
DBW	California Department of Boating and Waterways
DFG	California Department of Fish and Game
DPR	California Department of Parks and Recreation
DUA	day use area
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
FRRPD	Feather River Recreation and Park District
FRSA	Feather River Service Area
GIS	geographic information system
HPMP	Historic Properties Management Plan
I&E	interpretation and education
ISO	Independent System Operator
LCU	License Coordination Unit
LOSRA	Lake Oroville State Recreation Area
maf	million acre-feet
MOA	Memorandum of Agreement
mph	miles per hour
msl	mean sea level
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
O&M	operations and maintenance

ACRONYMS AND ABBREVIATIONS (cont.)

OHV	off-highway vehicle
ORCA	Oroville Recreation Coordinating Agencies
OWA	Oroville Wildlife Area
PME	protection, mitigation, and enhancement
PRC	Public Resources Code
project	Oroville Facilities Project No. 2100
PWC	personal watercraft
RA	Resource Action
RMP	Recreation Management Plan
ROW	right-of-way
RSWG	Recreation and Socioeconomics Work Group
RV	recreational vehicle
SR	State Route
SVRA	State Vehicular Recreation Area
SWC	State Water Contractors
SWP	State Water Project
TA	trailhead access
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
WCB	Wildlife Conservation Board

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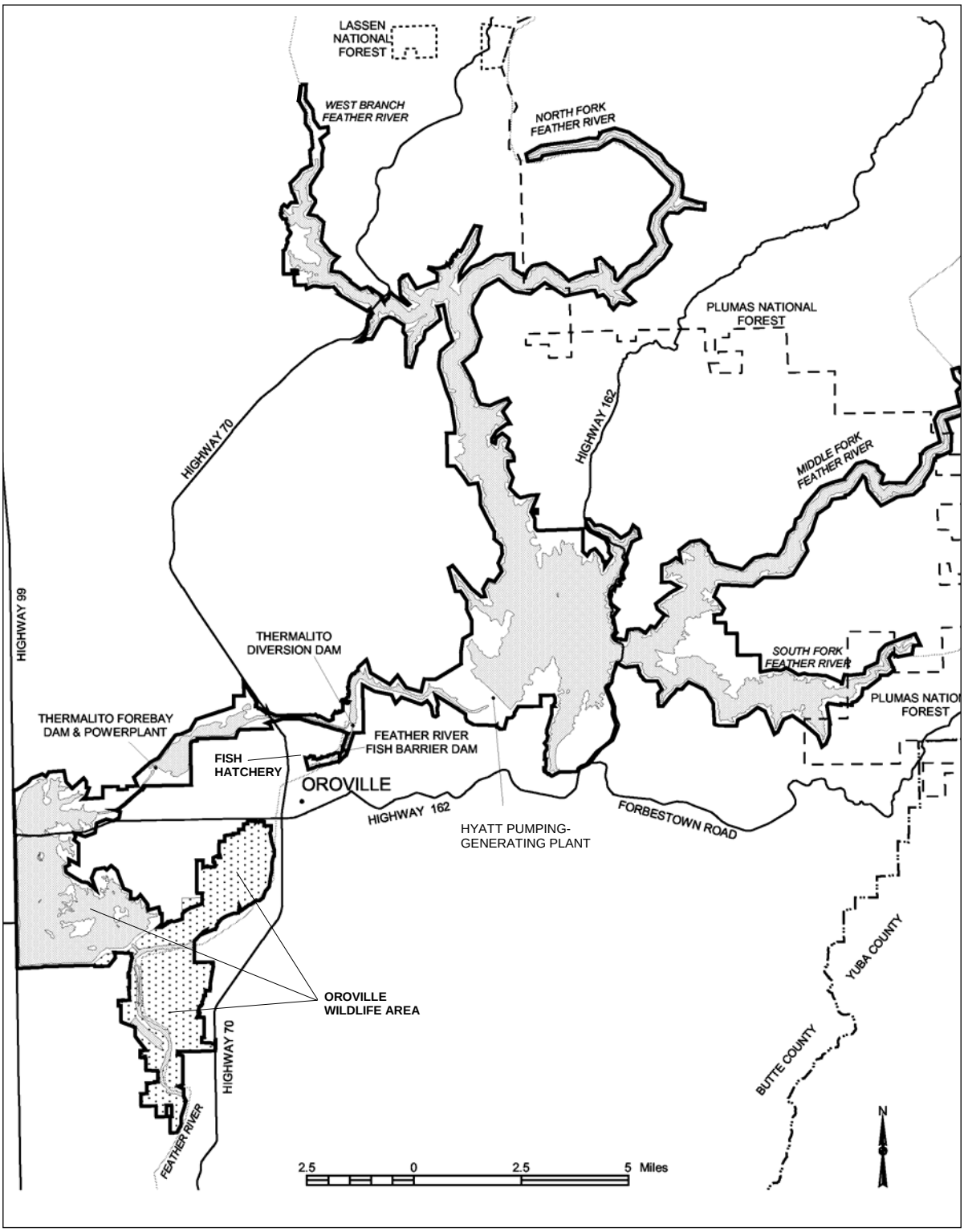
1.0 INTRODUCTION

The California Department of Water Resources (DWR) has prepared this Recreation Management Plan (RMP) as a component of its Application for a new Federal Energy Regulatory Commission (FERC) License to operate the Oroville Facilities (FERC Project No. 2100 or project). Over the past 3 years, in anticipation of the need for this RMP, a series of related studies have been conducted to assess and evaluate recreation resources associated with the Oroville Facilities. This RMP is the culmination of the results of those studies and is intended to relate most comprehensively to Relicensing Study R-17 – *Recreation Needs Analysis*.

The Oroville Facilities are located on the Feather River at the foothills of the Sierra Nevada mountains in Butte County, California. The Oroville Facilities include Lake Oroville, the second largest reservoir in California and the primary water storage facility of the State Water Project (SWP). Lake Oroville and three other project reservoirs, as well as the Feather River, provide numerous water supply, power generation, and flood control benefits. A graphic overview of these facilities is provided in Figure 1.0-1. In addition, the Lake Oroville State Recreation Area (LOSRA), the Oroville Wildlife Area (OWA), and other lands managed by the U.S. Forest Service (USFS) and U.S. Bureau of Land Management (BLM) provide a variety of recreational opportunities, including a number of developed use areas, trails, camping areas, and undeveloped or primitive use areas within the project area.

This RMP complies with FERC's regulations per 18 Code of Federal Regulation (CFR) 4.51(f)(5) and includes the following components:

- A description of the existing recreation facilities of the Oroville Facilities that will be continued as project-related facilities during the new license term;
- Identification of existing facilities to be rehabilitated;
- Proposed new facilities and enhancement of existing facilities to meet existing or new recreation needs;
- A schedule for development or rehabilitation of all facilities;
- Identification of entities that will construct, maintain, and operate the facilities;
- An estimate of the costs of construction, operation, and maintenance of the facilities;
- Drawings of each recreation site illustrating existing and proposed facilities, as applicable;
- Descriptions of programs and/or plans for public interpretation and education;
- A plan for monitoring the use and condition of recreation facilities; and
- A plan for the periodic review, and revision as necessary, of the RMP.



Source: DWR 2003

Figure 1.0-1. Oroville Facilities FERC Project No. 2100 Boundary (2005).

Existing facilities at Lake Oroville offer a wide variety of recreational opportunities, principally within LOSRA lands managed by the California Department of Parks and Recreation (DPR). Camping experiences in the area range from fully developed campgrounds to primitive, less-developed sites; boat-in and unique floating campsites also exist. There are two full-service marinas, nine boat ramps, six car-top boat ramps, ten floating campsites, seven floating restrooms, and a visitor center located around Lake Oroville. There are developed recreation facilities at Loafer Creek, Bidwell Canyon, Spillway, and Lime Saddle. Recreation facilities are listed in Table 1.0-1 and their locations depicted in Figure 1.0-2. Other recreation opportunities include picnicking, swimming, horseback riding, hiking, off-road bicycle riding, wildlife watching, and hunting. The area also offers visitor information sites with cultural and informational displays about project facilities and the area's natural environment.

Additional recreational and visitor facilities are located at Thermalito Forebay, Diversion Pool, Thermalito Afterbay, and the OWA (Table 1.0-1 and Figure 1.0-2). Thermalito Forebay and most of the Diversion Pool are part of the LOSRA, and thus managed by DPR. Thermalito Afterbay, which is part of the OWA, and the OWA proper, are currently managed by the California Department of Fish and

Table 1.0-1. Existing recreation facilities within the project boundary.

Facilities
Campgrounds **Individual, Group, and "En Route" Campsites** • Bidwell Canyon Campground • Lime Saddle Campground • Lime Saddle Group Campground • Loafer Creek Campground • Loafer Creek Group Campground • Loafer Creek Horse Campground • Spillway "En Route" RV Campground • North Thermalito Forebay "En Route" RV Campground • OWA Camping Area **Boat-in Campsites (BICs) and Floating Campsites** • Goat Ranch BIC • Foreman Creek BIC • Craig Saddle BIC • Bloomer Cove BIC • Bloomer Knoll BIC • Bloomer Point BIC • Bloomer Group BIC • Floating Campsites
Day Use Areas (DUAs) • Diversion Pool (Burma Road) DUA • Feather River Fish Hatchery (DWR/DFG) • Lake Oroville Visitors Center (DWR/DPR) • Loafer Creek BR/DUA • Oroville Dam DUA

Table 1.0-1. Existing recreation facilities within the project boundary.

Facilities
• Oroville Wildlife Area • Model Airplane Flying Facility • OWA Thermalito Afterbay Outlet DUA
Boat Ramps (BRs) **Boat Ramps with Day Use Areas** • Bidwell Canyon BR/DUA • Enterprise BR/DUA • Lime Saddle BR/DUA • Monument Hill BR/DUA • North Thermalito Forebay BR/DUA • South Thermalito Forebay BR/DUA • Spillway BR/DUA **Boat Ramps** • Wilbur Road BR • Larkin Road Car-top BR • Foreman Creek Car-top BR • Stringtown Car-top BR • Dark Canyon Car-top BR • Nelson Bar Car-top BR • Vinton Gulch Car-top BR • Afterbay Outlet BR • OWA unimproved BRs
Trailheads and Trails • East Hamilton Road Trailhead Access, Thermalito Afterbay • Toland Road Trailhead Access • Lakeland Boulevard Trailhead Access • Saddle Dam DUA Trailhead Access • Tres Vias Road Trailhead Access, Thermalito Afterbay • Bidwell Canyon Trail • Brad B. Freeman Trail • Chaparral Interpretive Trail • Dan Beebe Trail • Lime Saddle Trail • Loafer Creek Loop Trail • Loafer Creek Day Use/Campground Trail • Sewim Bo Trail • Oroville Wildlife Area Trails • Potter's Ravine Trail • Roy Rogers Trail • Wyk Island Trail

Game (DFG). However, the land-based recreation facilities at the Afterbay, and patrol and security of those facilities and the Afterbay surface, have historically been the responsibility of DWR. Other recreation facilities exist outside but adjacent to the current project boundary, most notably DPR's Clay Pit State Vehicular Recreation Area (SVRA), DFG's Rabe Road Shooting Range, and the Feather River Recreation and Park District's (FRRPD) Riverbend Park and Bedrock Park.

DWR currently has license responsibilities for facilities and designated recreation areas in the study area. DWR has agreements with DPR and DFG to manage most recreational facilities and wildlife resources and areas within the project boundary. DPR has management responsibilities at Lake Oroville, Diversion Pool, and Thermalito Forebay. DFG has land management responsibilities at Thermalito Afterbay and the OWA, though DWR operates and maintains Thermalito Afterbay recreation areas. Several of these existing agreements may need to be amended or otherwise superseded by this draft RMP (Appendix E). Various new agreements with DPR, DFG, and others will also need to be negotiated to fully implement the RMP.

1.1 RECREATION PLANNING AND MANAGEMENT CONSTRAINTS

Recreation is one of the purposes of the SWP, and thus a purpose of the Oroville Facilities. However, recreation benefits are developed and managed subordinate to other primary purposes and other environmental constraints, and a review of this operating environment is important in understanding the context and role of recreation in the Oroville Facilities area.

1.1.1 General Operations

Operation of the Oroville Facilities varies seasonally, weekly, and hourly, depending on hydrology and the objectives DWR is trying to meet. Typically, releases to the Feather River are managed to conserve water while meeting a variety of water delivery requirements, including flow, temperature, fisheries, diversion, and water quality. Lake Oroville stores winter and spring runoff for release to the Feather River as necessary for project purposes. Meeting the water supply objectives of the SWP and the needs of the agricultural diverters in the Feather River Service Area (FRSA) has always been the primary consideration for determining Oroville Facilities operation (within the regulatory constraints specified for flood control, instream fisheries, and downstream uses) and will continue to be so. Power production is scheduled within the boundaries specified by the water operations criteria noted above.

Annual operations planning is conducted for multi-year carryover storage. The current methodology is to retain half of the Lake Oroville storage above a specific level for subsequent years. Currently, that level has been established at 1,000,000 acre-feet (af); however, this does not limit drawdown of the reservoir below that level. If hydrology is drier or requirements greater than expected, additional water could be released from Lake Oroville. The operations plan is updated regularly to reflect forecast changes in hydrology and downstream operations. Typically, Lake Oroville is filled to its

maximum operating level of 900 feet above mean sea level (msl) in June and then lowered as necessary to meet downstream requirements, to a minimum level in December or January (approximately 700 feet msl). During drier years, the reservoir may be drawn down more and may not fill to desired levels the following spring. Project operations are directly constrained by downstream operational demands and flood management criteria as described in Relicensing Study SP-E4 *Flood Management Study.*

1.1.2 Temperature Requirements

The Diversion Pool provides the water supply for the Feather River Fish Hatchery. The hatchery temperature objectives are 52°F for September, 51°F for October and November, 55°F for December through March, 51°F for April through May 15, 55°F for the last half of May, 56°F for June 1-15, 60°F for June 16 through August 15, and 58°F for August 16-31. In April through November, a temperature range of plus or minus 4°F is allowed for objectives.

There are several temperature objectives for the Feather River downstream of the Afterbay outlet. During the fall months, after September 15, the temperatures must be suitable for fall-run Chinook salmon. From May through August, the temperatures are managed to be suitable for shad, striped bass, and other warm water fish.

The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) has also established explicit criteria for steelhead trout and spring-run Chinook salmon, memorialized in a biological opinion on the effects of the Central Valley Project (CVP) and SWP on Central Valley spring-run Chinook and steelhead. As a reasonable and prudent measure, DWR attempts to control water temperature at Feather River mile 61.6 (Robinson's Riffle in the Low Flow Channel) from June 1 through September 30. This measure attempts to maintain water temperatures less than or equal to 65°F on a daily average. The requirement is not intended to preclude pump-back operations at the Oroville Facilities needed to assist the State of California with supplying energy during periods when the California Independent System Operator (ISO) anticipates a Stage 2 or higher alert.

The hatchery and river water temperature objectives sometimes conflict with temperatures desired by agricultural diverters. Under existing agreements, DWR provides water for the FRSA contractors. The FRSA contractors claim a need for warmer water during spring and summer for rice germination and growth (i.e., minimum 65°F from approximately April through mid-May, and minimum 59°F during the remainder of the growing season), though there is no explicit contractual obligation for DWR to meet the rice water temperature goals. However, to the extent practical, DWR does use its operational flexibility to accommodate the FRSA contractors' temperature goals.

1.1.3 Water Diversions

Monthly irrigation diversions of up to 190,000 af (July 2002) are made from the Thermalito Complex during the May through August irrigation season. Total annual entitlement of the Butte and Sutter County agricultural users is approximately 1.0 million acre-feet (maf). After meeting these local demands, flows into the lower Feather River (and outside of the Project No. 2100 boundary) continue into the Sacramento River and into the Sacramento-San Joaquin Delta. In the northwestern portion of the Delta, water is pumped into the North Bay Aqueduct. In the south Delta, water is diverted into Clifton Court Forebay where the water is stored until it is pumped into the California Aqueduct.

1.1.4 Water Quality

Flows through the Delta are maintained to meet Bay-Delta water quality standards arising from DWR's water rights permits. These standards are designed to meet several water quality objectives such as salinity, Delta outflow, river flows, and export limits. The purpose of these objectives is to attain the highest reasonable water quality, considering all demands being made on the Bay-Delta waters. In particular, they protect a wide range of fish and wildlife including Chinook salmon, Delta smelt, striped bass, and the habitat of estuarine-dependent species.

1.2 FLOOD MANAGEMENT

The Oroville Facilities are an integral component of the flood management system for the Sacramento Valley. During the wintertime, the Oroville Facilities are operated under flood control requirements specified by the U.S. Army Corps of Engineers (USACE). Under these requirements, Lake Oroville is operated to maintain up to 750,000 af of storage space to allow for the capture of significant inflows. Flood control releases are based on the release schedule in the flood control diagram or the emergency spillway release diagram prepared by the USACE, whichever requires the greater release. Decisions regarding such releases are made in consultation with the USACE.

The flood control requirements are an example of multiple use of reservoir space. When flood management space is not required to accomplish flood management objectives, the reservoir space can be used for storing water. From October through March, the maximum allowable storage limit (point at which specific flood release would have to be made) varies from about 2.8 to 3.2 maf to ensure adequate space in Lake Oroville to handle flood flows. The actual encroachment demarcation is based on a wetness index, computed from accumulated basin precipitation. This allows higher levels in the reservoir when the prevailing hydrology is dry. When the wetness index is high in the basin (i.e., high potential runoff from the watershed above Lake Oroville), required flood management space is at its greatest to provide the necessary flood protection. From April through June, the maximum allowable water supply storage limit is increased as the flooding potential decreases, which allows capture of the higher spring flows for use later in the year. During September, the maximum allowable storage decreases again to prepare for the next flood season. During flood events,

actual storage may encroach into the flood reservation zone to prevent or minimize downstream flooding along the Feather River.

2.0 OVERVIEW OF THE RECREATION MANAGEMENT PLAN

This section presents an overview of the RMP. Specifically, it provides a user's guide and discusses the purpose and intent of the RMP, plan vision, methodologies used, monitoring, overview of the implementation programs, issues and assumptions, and defines terms used throughout the draft RMP.

2.1 USER'S GUIDE

This section is intended to clarify potential conflicts or ambiguity in implementing the RMP during the term of the new license. If the authority or action is unclear or contradictory, the following prioritized list of agreements, plans, or documents will guide decision-makers. The priority is as follows (first to last):

- FERC license order terms and conditions.
- Project management plans, including the final RMP (after FERC approval) and associated detailed sections and appendices.
- Project management plans, including the final RMP and associated broader goals, objectives, and vision statements.

Potential conflicts or ambiguity in implementing the final RMP may be discussed and addressed during recreation coordination meetings (Sections 4.3, 4.4, and 7.4) and during periodic RMP review (Section 7.5). Potential revisions to the RMP to help clarify potential conflicts or ambiguity may occur when necessary at the discretion of the licensee or at least every 12 years to coincide with FERC Form 80 reporting associated with the Recreation Monitoring Program (Section 7.3).

2.2 PURPOSE AND INTENT

The purpose of the draft RMP is to guide and facilitate the management of existing and future recreation resources associated with the Oroville Facilities. The draft RMP provides a vision of the desired future condition for recreation resources in the project area, establishes long-term goals and objectives for managing recreation resources in the project area, and identifies both site-specific and programmatic recreation measures to be implemented over the term of the new license. This vision should not be interpreted to mean any particular feature will be implemented. Six programs are presented in the draft RMP that implement these proposed measures. The draft RMP also details estimated costs for development and operation, provides conceptual site designs, and provides an implementation schedule for recreation actions and enhancements. The cost estimates herein are preliminary and were performed at a general reconnaissance level. While the proposed measures and actions identified in the Draft RMP reflect the Licensee's recreation resource goals in the new license, the dollar amounts are not a specific or actual funding level commitment.

Taken as a whole, the draft RMP represents a single "umbrella" protection, mitigation, and enhancement (PME) measure for recreation resources. The draft RMP is intended

to be specific to DWR's recreation resource roles and responsibilities for the term of the new FERC license. The draft RMP does not make management or resource commitments for other entities such as the USFS, other federal agencies, Tribes, or other non-SWP-related stakeholders. However, the continued active involvement of these other recreation participants in the project area is important in helping to meet the overall recreation needs of visitors and residents during the term of the new license. As such, continued coordination with these participants will continue as defined in the draft RMP.

2.3 PLAN VISION

The draft RMP provides a long-term vision of how project-related recreation resources should be managed in the project area for the term of the new license. The draft RMP has benefited from the cooperative nature of the relicensing process, which included input and advice from the Recreation and Socioeconomic Work Group (RSWG) and other stakeholders. The draft RMP vision is provided below as a series of statements and is consistent with results and recommendations produced by FERC Project No. 2100 Relicensing Studies:

- DWR and other recreation providers in the area have a shared responsibility to help meet the needs of visitors and residents over the term of the new license.
- DWR will be an active recreation provider in the project area through implementation of the draft RMP.
- DWR recognizes the need to provide additional shoreline recreation opportunities at Lake Oroville and other project facilities.
- DWR will closely coordinate project-related recreation resource needs with other land and resource management agencies and recreation providers in the project area, particularly USFS, BLM, DPR, DFG, California Department of Boating and Waterways (DBW), and FRRPD.
- DWR will utilize appropriate coordination efforts aimed at balancing various resource needs to achieve the best outcome possible for the region's resources within the terms and conditions of the new license.
- DWR acknowledges that conditions will change over time and that monitoring is an appropriate and necessary strategy to help manage project-related recreation resources in the future.
- DWR desires to maintain and/or improve the experience now enjoyed by area residents and visitors to the project area by providing and maintaining appropriate developed recreation facilities and dispersed recreation opportunities in suitable locations to address visitor needs.
- DWR will make all reasonable efforts to ensure that the other agencies that have a role in recreation implementation in the project area fulfill those responsibilities.

2.4 METHODOLOGIES USED

The methodology used to develop the draft RMP involved four principal tasks:

1. Conduct recreation-related technical studies and review the results with the RSWG and others;
2. Identify proposed recreation facility and operations and maintenance Resource Actions (RAs) with the RSWG and review these RAs as components of alternatives in the Draft License Application;
3. Select proposed RAs based on the results of Relicensing Study R-17 – *Recreation Needs Analysis*; and
4. Integrate the proposed RAs with other actions necessary to facilitate recreation management and a proposed Settlement Agreement between DWR and potential stakeholder signatories to that Settlement Agreement (future).

The draft RMP's six programs define DWR's responsibilities during the term of the new license and are summarized in Section 2.6.

2.5 MONITORING

Over the term of the new license, the draft RMP will be guided by a monitoring program that will be based on periodic review of recreation attendance and facility utilization, potential resource impacts, and consistency with local and regional plans. No long-term plan can reasonably predict exactly what is needed or foresee all events, particularly for a 30- to 50-year license term. As a result, actions taken will have to be adaptive within certain predictable limits. The monitoring program will be an interactive approach to decision-making that incorporates feedback mechanisms to evaluate actions and incorporate new information as it becomes available. Adaptations are necessary as conditions change and more is learned about resource constraints or how the resource is responding to planned activities or solutions. In general, the monitoring program has two main attributes: (1) it is a response to uncertainty about the resource being managed over time; and (2) future actions are dependent upon information acquired through monitoring the program or resource.

Not all recreational experiences are alike, and a mix of experiences over a large area such as the project area is desirable. As a result, different monitoring variables will be used in different recreational settings. Specific areas or reaches of the project area have been defined for different recreational settings or uses.

To implement the proposed monitoring program, two types of uncertainty are addressed:

1. **Ecological Uncertainty**—dynamic nature of environmental systems, such as changes in viability and distribution of wildlife habitats and wetlands, changes in water quality, and new species listings; and

2. **Measurement of Uncertainty**—uncertainty in the estimation and use of parameters such as user densities, occupancy rates, and theoretical capacities.

The monitoring program needs to be both flexible and operate within set parameters. Flexibility is needed to make some necessary changes over time, either in the monitoring program itself, or in how data are interpreted. At the same time, there needs to be certainty for the licensee related to costs incurred in implementing the draft RMP over time as needs change. Some planned projects may accelerate or decelerate over time. However, the total costs incurred by the licensee should not exceed the estimated total costs in Appendix A.

To address uncertainty, the following monitoring and related management strategies will be used:

- The draft RMP will be reviewed and updated, as necessary, by DWR approximately every 12 years from its implementation (two FERC Form 80[1] cycles – Appendix F) to address changing conditions. Smaller modifications may be incorporated by DWR into on-the-ground actions earlier than 12 years, as appropriate.

- Implementation plans at new or expanded recreation facilities will be further developed by DWR and DPR based on the results of periodic monitoring and identified recreation needs (see the Recreation Facility Development Program).

- Monitoring will be accomplished by continued collection of recreation use data and biennial interpretation of those data.

- Periodic interaction with other entities and stakeholders will be used to address potential resource management conflicts and to balance competing resource goals and values. This will be coordinated through the LCU.

- DWR funding for recreation actions and enhancements may vary by implementation scheduling or scope depending upon changing needs, but should not exceed the overall identified maximum estimated budget over the term of the new license (Appendix A).

[1] FERC Form 80 – FERC requires that all hydroelectric project licensees prepare and file a FERC Form 80 once every 6 years to document current public recreation use within the project area. This form (Appendix F) describes the current use and capacity of project recreation sites based on a specific methodology and standardized timeframe. This form may be amended over time.

2.6 OVERVIEW OF RMP PROGRAMS

The draft RMP includes six programs that define DWR's roles and responsibilities for recreation resources in the project area over the term of the new license. The six draft RMP programs include:

- A *Recreation Facility Development Program* that defines DWR's construction-related responsibilities to address existing and future project-related recreation needs, identifies proposed recreation development projects, provides estimated costs and scheduling for these recreation measures, identifies locations and provides conceptual layouts of the development measures, and discusses general facility development standards and design criteria to be used.

- A *Recreation Operations and Maintenance (O&M) Program* that defines DWR's existing and future recreation facility O&M responsibilities. This program addresses existing and future project-related O&M recreation needs, provides estimated costs for annual O&M, and discusses general facility and use area maintenance standards to be used. Other programmatic costs are also defined for draft RMP implementation, such as law enforcement. Anticipated agreements are mentioned that will be entered into between DWR and other entities to provide for O&M at Project No. 2100 recreation facilities.

- A *Recreation Monitoring Program* that defines how DWR will conduct recreation resource monitoring and how the monitoring information will be used in decision-making. This program discusses periodic monitoring and reporting responsibilities and identifies a decision-making framework related to when new facility construction would be triggered or initiated.

- A *Resource Integration and Coordination Program* that defines how DWR will integrate recreation resource needs with other resource management needs over time, such as cultural, wildlife, and aquatic resources. This program, facilitated by the LCU, will coordinate parallel resource management programs and actions, including meetings and workshops.

- A *Plan Review and Revision Program* that defines how the draft RMP will be updated or revised over the term of the new license. RMP revisions may be based on results from monitoring and coordination meetings with other recreation providers in the project area.

- An *Interpretation and Education (I&E) Program* that defines how hydroelectric energy production, environmental, cultural, and informational interpretation and education will be coordinated and conducted by DWR at project facilities. This program involves several resource areas including recreation, aesthetics/visual, fisheries, water quality, terrestrial, geology, and

cultural/historical. The basis for the I&E Program will be DWR's and DPR's extensive existing resources; specifically, coordination of existing Lake Oroville Visitors Center programs and staff with new and existing programs administered by DWR's Public Affairs Office and DPR's Interpretation and Education Division. This program will be aimed at project facilities but will be coordinated with other local recreation service and regional marketing providers (e.g., FRRPD, City of Oroville, Butte County, and Oroville Chamber of Commerce).

2.7 ISSUES AND ASSUMPTIONS

Based on technical recreation studies conducted during relicensing, and on RSWG and other stakeholder consultation, several issues and assumptions were identified regarding the management of recreation resources in the project area. These issues and assumptions are important to consider when revising or modifying the draft RMP over time and include the following:

- The project has resulted in public recreation opportunities and needs along the shorelines of Lake Oroville, the Feather River, Diversion Pool, Thermalito Forebay, and Thermalito Afterbay. These opportunities and needs are located principally within or directly adjacent to the FERC project boundary at the project reservoirs.

- DWR and other agencies provide public recreation facilities in the region and share areas of responsibility.

- To satisfy public recreation needs, several recreation providers, including DWR, have developed, operated, and maintained various public recreation facilities, principally within or adjacent to the FERC project boundary.

- New recreation development by DWR and sister agencies will be concentrated on State-owned land in suitable areas where it is compatible with the land uses and natural and cultural resources.

- The need for public recreation facilities and programs is anticipated to increase in the future, and these needs may change over time. New facility needs will occur during the term of the new license and will result in DWR having to construct, operate, and maintain new recreation facilities and programs, as well as renovate and upgrade existing project recreation facilities. Other recreation providers in the project area are also responsible for building, operating, and maintaining new recreational facilities, as well as renovating and upgrading their existing facilities.

- Public recreation providers must comply with the federal Americans with Disabilities Act (ADA), and the ADA Accessibility Guidelines for Buildings and

Facilities (ADAAG), as amended. ADAAG, when fully amended, may mandate the upgrade of some existing recreation facilities when major maintenance is undertaken or when new facilities are constructed. DWR intends to make most upgrades in the first 10 years of the new license.

- Additional recreation facilities will be needed in the future. Some new construction will depend on future monitoring of recreation facility use levels and will rely upon monitoring to justify reaching capacity threshold levels and sustained trends, thereby resulting in the need for management actions and/or new facilities.

- Partnerships and/or cost sharing between DWR and other recreation providers is planned for cooperatively funding some measures in the project area that will benefit the general public and improve the overall recreation experience in the project area.

- The draft RMP concentrates new recreation development in suitable locations, thereby retaining as much of the natural open space as possible to protect a range of resource values, such as wildlife, aesthetics, and cultural resources.

2.8 EXPLANATION OF TERMS

Key terms used in the draft RMP and relevant to recreation planning for the project are defined below.

- Project - The DWR Oroville Facilities, FERC Project No. 2100.

- Project Boundary - The FERC project boundary.

- Project-Related Recreation Needs - Existing and future recreation needs that are associated with the development and operation of the project for the new license term.

- Project Area - The project area includes all waters and lands within the FERC project boundary, all recreation resources within the project boundary, and all facilities on those lands and waters. Recreation facilities and areas within the project boundary are listed in Table 1.0-1 and their locations shown in Figure 1.0-2.

- License - The FERC license for the Oroville Facilities, FERC Project No. 2100.

- Term of the New License - The length of the anticipated new license for the project to be ordered by the FERC, ranging from 30 years to up to 50 years.

- Recreation and Socioeconomics Work Group (RSWG) - A work group established by DWR during relicensing specifically to help develop issues, study plans, and recommendations for Resource Actions. This work group contained representatives from State and federal agencies, the City of Oroville, City of Paradise, Butte County, local residents and landowners, and other resource and recreation stakeholders.

- FERC License Coordination Unit (LCU) - The licensee will recruit and assemble a pool of dedicated staff within the DWR Oroville Field Division office called the License Coordination Unit (LCU), to manage new license requirements. The LCU will be led by a management level individual who would serve a variety of roles associated with implementing new license requirements. The LCU will coordinate all license projects, act as liaison with community and other governmental and Tribal agencies, disseminate information regarding project status, update the webpage, organize meetings, keep DWR management apprised of issues and problems, and work with the community to minimize conflicts. The LCU will also coordinate responses to FERC with DWR's FERC compliance section at Sacramento Headquarters. The LCU is intended to give the community a direct point-of-contact for information and input on license issues.

3.0 GOALS AND OBJECTIVES

The draft RMP is intended to satisfy FERC requirements to prepare a recreation plan and to define the responsibilities of parties when public recreation facilities are to be provided. To satisfy this need, the draft RMP has established goals and objectives for managing recreation resources. These goals and objectives are intended to guide DWR while managing, planning, designing, and constructing recreation resources and facilities in the project area, and in making appropriate resource decisions during the term of the new license. As questions arise regarding decisions about implementing the draft RMP, particularly future actions, resource managers may compare future actions against these goals and objectives to evaluate consistency with the original intent of the RMP.

Seven RMP goals, and their respective objectives, are outlined below including:

- Help meet existing recreation resource needs in the project area;
- Help meet future recreation resource needs in the project area;
- Provide adequate public access along project shorelines;
- Preserve recreation resources;
- Coordinate recreation planning and needs;
- Provide cost-effective and diverse recreation opportunities; and
- Provide compatible recreation opportunities.

Goal 1: Help Meet Existing Recreation Resource Needs in the Project Area

Help provide a diverse spectrum of public and private recreational facilities, use areas, and opportunities within the project area that help meet existing project-related recreation needs.

- Objective 1a: Provide for the continued operation of existing public recreation facilities and use areas in the project area.

- Objective 1b: Provide public recreation facilities and use areas that respond to visitor facility preferences and needs as identified in visitor surveys conducted during relicensing.

- Objective 1c: Enhance existing public recreation facilities, as needed, by making necessary facility repairs and modifications and/or changes to facility operations and maintenance practices.

- Objective 1d: Comply with federal ADA guidelines (ADAAG, as amended) and provide for the public health and safety needs of all recreation visitors.

- Objective 1e: Manage existing project-related recreation resources in accordance with existing land and resource management plans and policies in the project area.

- Objective 1f: Develop an I&E Program and implement the program's actions at DWR facilities to enhance the visitor experience, inform visitors of facility use options, educate boaters about potential boating hazards, better distribute use amongst facilities, and educate visitors about sensitive resources and appropriate behavior.

- Objective 1g: Implement High priority recreation needs (existing needs) as defined in Appendix A. Initiate action on all High priority projects in the first 10 years after license issuance.

Goal 2: Help Meet Future Recreation Resource Needs in the Project Area

Help provide a diverse spectrum of public recreational facilities, use areas, and opportunities within the project area that help meet future project-related recreation needs.

- Objective 2a: In the future, monitor changes in recreation demand and help provide for recreation needs consistent with resource values and monitoring indicators and standards. Changes may include the emergence of new recreation technologies, continuing trends toward larger recreational vehicles (RVs), greater mixed use, and shorter day use hiking opportunities, increasing demand for water-based recreation opportunities, increased desire for educational/interpretive recreation opportunities, or others.

- Objective 2b: In the future, provide additional new public recreation facilities or use areas as justified by periodic monitoring of recreation facility and use area visitation, condition, and sustained demand over time.

- Objective 2c: In the future, continue to implement the Recreation Monitoring Program by monitoring recreation use levels at periodic times.

- Objective 2d: In the future, provide adequate funding to implement identified future project related recreation-related development projects and programs.

- Objective 2e: In the future, periodically review and update the recreation actions and enhancements within the project area (subsequently, the RMP will be reviewed approximately every 12 years, or two FERC Form 80 cycles).

- Objective 2f: In the future, periodically monitor dispersed shoreline recreational use in the project area and address related site impacts as necessary.

- Objective 2g: In the future, utilize I&E Program components to help distribute use amongst recreation facilities, if needed, and to educate the public about resource values, appropriate behavior, and potential boating hazards.

- Objective 2h: In the future, consider implementation of Moderate and Low priority recreation needs (future needs) as defined in Appendix A. When appropriate, initiate these actions after all High priority actions have been completed.

Goal 3: Provide Adequate Public Access Along Project Shorelines

Provide adequate public access to, and use of, project water bodies and shorelines in the project area.

- Objective 3a: Provide adequate public shoreline access and safe public recreation opportunities on project lands and waters as identified in the draft RMP, including campgrounds, viewpoints, shoreline trails, boat launches, swimming areas, and day use areas.

- Objective 3b: Through the I&E Program, provide adequate informational signs and programs to alert boaters, swimmers, anglers, and other users about operational or natural hazards in and around project facilities.

- Objective 3c: Support increased non-motorized trail opportunities, both multiple-use and/or single use where appropriate, in the project area by coordinating access opportunities across and adjacent to project lands.

- Objective 3d: Improve universal accessibility in the project area by adhering to federal ADA guidelines (ADAAG, as amended) at all existing and future project recreation facilities.

- Objective 3e: Through the I&E Program, communicate to the public the range of recreation facilities and use areas that are available in the project area.

- Objective 3f: Coordinate fully with the local law enforcement agencies in the project area.

Goal 4: Preserve Recreation Resources

Avoid, minimize, or mitigate existing and future project-related impacts to recreation resources in the project area and help preserve the resource base.

- Objective 4a: Allow for recreation use of the project reservoirs by providing facilities that accommodate a range of reservoir pool levels.

- Objective 4b: Through the Recreation Monitoring Program, conduct periodic monitoring of recreation use at project water bodies to assess potential impacts to recreation, natural, and cultural resources over time and take appropriate corrective measures as needed.

- Objective 4c: Through the I&E Program, provide environmental and other education opportunities in the project area to foster a better understanding and stewardship of natural and man-made resources.

- Objective 4d: Allow for public access to appropriate project lands to help meet the long-term recreation goals and objectives in the project area and to maintain the existing recreational experience over time.

- Objective 4e: Focus future recreation development in suitable areas that do not significantly affect the existing recreation experience or sensitive resources at project facilities. Natural and cultural resource constraints will be considered in determining suitability in the adaptive management strategy.

- Objective 4f: In the I&E Program, help protect and interpret significant natural features and enhance the public's recreational experience in the project area (e.g., through interpretation, kiosks, signs, Watchable Wildlife programs, etc.).

- Objective 4g: Respect property rights and surrounding natural environments while addressing the need for additional recreation facilities and increased recreation use in the project area over time.

Goal 5: Coordinate Recreation Planning and Needs

Coordinate future DWR recreation planning efforts in the project area with federal, State, and local land and resource management agencies, public recreation providers, and private recreation stakeholders prior to making new recreation development decisions.

- Objective 5a: In the Recreation Monitoring Program, monitor recreation resources and visitation using monitoring indicators and standards, and

identify appropriate management actions and associated costs needed to address identified problems.

- Objective 5b: Provide adequate DWR staffing and resources to address recreation resource planning and permitting in the project area over the term of the new license.

- Objective 5c: Participate in other comprehensive planning efforts that may be undertaken by local agencies in the area to coordinate implementation of the draft RMP over the term of the new license.

- Objective 5d: Periodically consult with natural and cultural resource specialists to ensure that recreational planning, use, and facilities do not limit or unnecessarily infringe on the environmental characteristics necessary to sustain traditional cultural practices.

- Objective 5e: Review the RMP approximately every 12 years and update the RMP programs, as appropriate to address changing conditions over time. Smaller revisions may be undertaken on a more frequent basis.

Goal 6: Provide Cost-Effective and Diverse Recreation Opportunities

Provide cost-effective recreation facilities and programs in the project area to maximize on-the-ground recreation improvements using available dollars, minimize operational and maintenance costs where possible while meeting standards, and provide for compatible and desirable facilities that help meet the needs of visitors.

- Objective 6a: Promote public recreation facilities and programs that are cost-effective, and work with others on larger public projects that benefit visitors to the project area and area residents.

- Objective 6b: Provide public facilities that minimize, to the extent feasible, long-term O&M costs.

- Objective 6c: Provide cost-effective public recreation facilities that generally accommodate existing visitor facility preferences, but also allow for future modification if preferences change over time.

- Objective 6d: Provide a range of public recreation opportunities that include developed fee sites and undeveloped or dispersed non-fee sites to allow for a diversity of visitor choice and experience.

- Objective 6e: Allow for appropriate public recreation-related opportunities and facilities in the project area, while managing the project area to exclude

inappropriate or incompatible recreation activities in specific areas or at specific times.

Goal 7: Provide Compatible Recreation Opportunities

Provide public recreation resources that are compatible with adopted land and resource plans and policies and sensitive resources in the project area.

- Objective 7a: Provide public recreation facilities and programs that are compatible with adopted land and resource plans and policies, as well as other project-related resource needs, goals, and objectives including water quality, cultural, terrestrial, aesthetic/visual, and aquatic resources.

- Objective 7b: Through the I&E Program at licensee facilities, provide environmental education opportunities (e.g., through viewpoints, interpretive signs or kiosks, environmental education programs, and nature trails) that demonstrate compatibility with and stewardship of natural and cultural resources in the project area.

- Objective 7c: Provide public recreation facilities that are compatible with project operations in the new FERC license.

- Objective 7d: Provide public recreation facilities and programs that are compatible with and supplement existing tourism and local residents' recreation needs in the project area.

4.0 RECREATION MANAGEMENT, PLANNING, COORDINATION, AND RESPONSIBILITIES

Lands, facilities, and recreational interests of the Project No. 2100 study area are publicly owned and/or managed by a number of State, federal, and local agencies, most notably DWR, DPR, DFG, USFS, BLM, and FRRPD. The properties and management responsibilities of these agencies are detailed in a series of deeds, agreements, and transfers among the agencies involved (Appendix E). Relevant agency ownership, management responsibilities, and current management practices throughout the Project No. 2100 area are described below. Under FERC regulations, DWR is ultimately responsible for public access, recreation opportunities, and associated development within the Project boundary. Figures 4.0-1, 4.0-2, and 4.0-3 illustrate the land-based jurisdictions of each of the managing agencies.

4.1 DAVIS-DOLWIG ACT AND OTHER SWP RECREATION MANAGEMENT AUTHORITIES AND AGREEMENTS

In 1961, the California Legislature passed the Davis-Dolwig Act (California Water Code Sections 11900–11925) which identified four State agencies (DWR, DPR, DFG, and DBW) as responsible for providing recreational opportunities and fish and wildlife enhancements as part of the SWP. Under Davis-Dolwig, DWR is charged with planning for public recreation and fish and wildlife preservation and enhancement in connection with the development of SWP facilities. This duty involves acquiring land and locating and constructing all works and project features so as to allow for fish and wildlife enhancement and recreational uses following construction of the project. DPR and DFG are charged with designing, constructing, operating, and maintaining public recreation facilities and managing fish and wildlife resources, respectively. DBW, in turn, is charged with planning, designing, and constructing boating-related facilities.

Because DWR has acknowledged ultimate responsibility for public recreation mandated by FERC regulations and the current Project No. 2100 Recreation Plan, DWR has assumed more direct involvement in implementation and operation and maintenance of new recreation facilities since 1994. Circumstances related to variability in State budget appropriations have resulted in interim agreements that provide for public recreation benefits funded, as directed by FERC Order, directly by DWR, and services delivered by DWR and several contracting entities (Appendix E).

4.2 ROLES AND RESPONSIBILITIES

The Oroville Facilities—including Oroville Dam, Lake Oroville, Hyatt Pumping-Generating Plant, Thermalito Pumping-Generating Plant, Thermalito Diversion Dam, Thermalito Diversion Dam Power Plant, Thermalito Forebay, Thermalito Afterbay, Fish Barrier Dam, and Thermalito Power Canal—are owned by the State of California and are operated by DWR. In addition, DWR funds many of the recreational and fish and wildlife preservation and enhancement facilities associated with the Oroville Facilities, including the Feather River Fish Hatchery, which are operated by other agencies. The

Oroville Facilities, designed and constructed by DWR in the 1960s, are a critical part of the SWP and provide significant water collection and storage, flood management, and power production capabilities. Land acquisition and construction authorization for the Oroville Facilities were given by the Central Valley Project Act, passed by the State Legislature in 1951. In accordance with the California Water Code (Section 346), properties for recreation purposes were acquired by DWR at the same time that land was acquired for the Oroville Facilities. By necessity as well as by statute, DWR works closely with other agencies, including DPR, DFG, and DBW, to both fund and implement the programs and improvements required by FERC. Furthermore, some lands within the Project No. 2100 Boundary remain federal lands, subject to USFS and BLM planning and management, though most of the day-to-day management responsibilities have been delegated to the State by the existing FERC license.

4.2.1 Department of Water Resources

It is ultimately DWR's responsibility to ensure that all Project No. 2100 required improvements, maintenance, and studies mandated by FERC are properly carried out. Although DWR does not manage the majority of the recreational facilities in the study area, it is responsible for coordinating and implementing a variety of recreation-related projects and improvements. DWR has various statutory, administrative, and contractual responsibilities with various State agencies. However, FERC Orders articulating DWR's responsibility to carry out improvement projects, fishery studies and fish stocking programs, hatchery operations, and other recreation-related tasks have been added as amendments to the existing FERC License to operate the Oroville Facilities.

4.2.2 Department of Parks and Recreation

The official mission of DPR is "to provide for the health, inspiration, and education of the people of California by helping to preserve the State's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation" (DPR 2003). In addition, DPR's Northern Buttes District (which manages LOSRA) aims "to perpetuate, enhance, and make available to all people the natural and cultural resources and recreational opportunities within the District" through the "delivery of outstanding park and recreational services, maintaining at all times a customer-oriented approach which emphasizes quality, integrity, courtesy, and efficiency." DPR's Core Programs, linked directly to the agency's mission, include Resource Protection, Education and Interpretation, Facilities, Public Safety, and Recreation (DPR 2001).

Ongoing DPR management duties within LOSRA include:

- Park equipment and facilities maintenance;
- Systems maintenance;
- Safety and enforcement, on both land and water;
- Project management;

- Volunteer management;
- Concession management;
- Resource management;
- Park administration;
- Interpretive activities; and
- Strategic planning.

Routine tasks performed by DPR staff include collecting fees and monitoring attendance; cleaning and maintaining restrooms and toilet buildings and servicing trash receptacles; maintaining camping and day use areas, including boat ramps, courtesy docks, and 47 miles of trails; monitoring and maintaining buoys and vessels; and maintaining recreation area grounds and landscaping. Although fish and wildlife management generally falls under DFG authority, DPR Rangers have the authority to enforce hunting and fishing regulations and the Fish and Game Code in the LOSRA. DPR Resource Ecologists, such as Dr. Henry Wood Elliot II, and related staff also plan and implement natural and cultural resource protection and enhancement projects within LOSRA.

DPR is also responsible for carrying out boat safety inspections and providing safety patrols at Lake Oroville, Diversion Pool, and Thermalito Forebay. Other tasks include road maintenance for approximately 21 miles of road, maintenance of all park utilities (including electrical, water, and wastewater facilities), and capital improvement of all recreational facilities. In addition to DPR, two private concessionaires operate and maintain facilities at the Bidwell Canyon and Lime Saddle Marinas, subject to DPR contracts and oversight (Appendix E).

Utility services in LOSRA are overseen by a water/sewer plant supervisor. In addition to LOSRA staff, DPR's other Northern Buttes District administrative staff provide direct aid to a dozen other State Park System units in the District. DPR annually hires additional seasonal support staff in the summer to operate entrance stations and carry out basic facility maintenance tasks.

Consistent with the Statewide strategies and management practices outlined in *The Seventh Generation: The Strategic Vision of California State Parks* (DPR 2001), DPR's related management strategies and practices in the LOSRA include:

- Public involvement: meeting with interest groups and the general public;
- Interagency involvement: meeting and conferring with other agencies;
- Hiring qualified staff;
- Contracting professional services;
- Seeking alternative funding sources, including grants and reimbursements;
- Using data collection to identify and resolve relevant issues; and
- Following Total Quality Management practices.

Within LOSRA, DPR manages interpretive programs, activities at the Lake Oroville Visitors Center, special events coordination, and general recreational opportunities consistent with the stated management strategies. The California Public Resources Code (Section 5019.56) authorizes DPR to undertake improvements to provide for a number of recreational activities, including camping, picnicking, swimming, hiking, bicycling, horseback riding, boating, and water sports.

4.2.3 Department of Fish and Game

DFG's mission is "to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public." The California Fish and Game Code empowers DFG to carry out all Code provisions via a number of management and regulatory avenues, including regulation of hunting and fishing, development of ecological reserves and management areas, review and permitting of proposed projects, and public education and habitat improvement programs. DFG is responsible for managing all fish and wildlife resources in the State. Fishing and hunting are important recreational activities associated with Project No. 2100, especially in LOSRA and along the Feather River. In addition to fish and wildlife management, DFG regulates hunting and fishing throughout the project area, including within the LOSRA.

DFG is the managing agency for the OWA (Figure 4.0-3), which was formally established in 1968. DWR acquired this area in the public interest in part for fish and wildlife enhancement and recreational use in 1962. By 1968, a total of 5,500 acres were transferred from DWR to DFG for creation of the OWA. Additional acreage was added to the OWA by DWR for inclusion in the OWA through a series of transfer agreements between 1973 and 1986, primarily in the vicinity of the Thermalito Afterbay.

Management authority for the Thermalito Afterbay water surface and adjoining State shoreland "as may be necessary for access and use during waterfowl hunting season" was transferred to DFG through an agreement with DWR (DWR and DFG 1973). That agreement required DFG to provide and maintain bathroom facilities and parking areas, install and maintain safety warning signs where necessary, and clean up the Thermalito Afterbay area following hunting season.

A subsequent agreement between DWR and DFG, dated January 24, 1986, transferred "an easement for such management of the Thermalito Afterbay water surface and adjoining lands to use as a wildlife area and associated recreation," and states that the "operation and maintenance of the subject property as a wildlife habitat area shall be the sole responsibility of [DFG], and [DWR] shall not be liable for any costs arising from such operation and maintenance." The OWA currently encompasses 11,870 acres, including Thermalito Afterbay and shoreline lands.

DFG also manages the Feather River Fish Hatchery both for fish stocking and salmon fishery mitigation and as an interpretive facility open to the public. The hatchery is

operated by DFG, with substantial funding and maintenance provided by DWR. In addition, DFG studies and manages the warm- and coldwater fisheries in Lake Oroville and assists with DWR's habitat improvement and fish stocking programs.

DFG also maintains authority over all hunting and fishing activities and regulations at LOSRA, and over all activities with the potential to affect wildlife or wildlife habitat. For example, DFG has permitting authority over certain projects throughout the project area, including issuing authority for Fish and Game Code Section 1600 agreements, which apply to projects that would affect the flow, bed, channel, or bank or any river, stream, or lake.

4.2.4 Department of Boating and Waterways

The mission of DBW is to improve access to California waters for the recreational boating public, and to make sure that boating is as safe as possible. It is estimated that DBW serves an estimated 3 million California boaters (DBW 2002). DBW's management goals are the same throughout the State and are not site specific, as DBW neither owns nor manages any recreational facilities or activities within the Project No. 2100 boundary.

DBW administers a number of programs, including boating and aquatic safety education and training programs, boat and yacht licensing programs, and programs that fund the development of public-access boating facility projects. DBW funds and constructs various projects at Project No. 2100 related to boating and boating-related facilities, including boat-in facilities, boat ramps and associated parking areas, floating restrooms, other restrooms at boat ramps, and general renovation of boating facilities. Projects pursued by DBW are typically proposed following suggestions from other agencies and from the public through DBW's public outreach programs. Following construction, the responsibility for operation and maintenance of facilities is turned over to the appropriate land and water managing agency—at Project No. 2100, this has historically been DPR and/or DWR.

4.2.5 California Highway Patrol

The California Highway Patrol (CHP) provides uniform traffic law enforcement throughout California. Assuring the safe, convenient, and efficient transportation of people and goods on the State's highway system is still the agency's primary purpose, but in 1995 the CHP was merged with the California State Police. In assuming those related duties, it statutorily became the primary agency responsible for security and law enforcement at all State facilities and lands (except lands of the State Park System). Per the explicit exception for State Park lands, it is not responsible for law enforcement in the LOSRA. CHP is, however, responsible for patrol and law enforcement on OWA lands and at all Project No. 2100 facilities and on DWR lands not otherwise part of the LOSRA.

4.2.6 U.S. Forest Service

The USFS manages approximately 2,039 acres of land located in the North, Middle, and South Fork arms of Lake Oroville inside the FERC project boundary (Figures 4.0-1 and 4.0-2). Many of the parcels are within the reservoir's inundation zone, but many also include shoreline and upland areas of the LOSRA. Almost all of these lands are within the Plumas National Forest and the remainder, located in the North Fork arm of Lake Oroville, are within the Lassen National Forest.

Local USFS lands are managed under the 1988 Plumas National Forest Land and Resource Management Plan (Forest Plan). In addition, management of these lands is influenced by the more recent Sierra Nevada Forest Plan Amendment (Plan Amendment). The Forest Plan establishes the management goals and policies that direct the management of the Forest over 10 to 15 years (the “planning period”) and helps meet long-term objectives over a 50-year period (the “planning horizon”). The Forest Plan also prescribes management practices for specified areas and time periods needed to obtain these objectives. The policies for the lands in the areas near the project primarily emphasize resource conservation, provision of high quality recreational opportunities, and protection of visual resources.

The USFS and DPR have an agreement concerning management of National Forest System lands located within the Project No. 2100 boundary. The agreement, dated March 16, 1978, allows DPR to conduct law enforcement activities on National Forest System land. The USFS retains all other authorities. In the agreement, the USFS transferred an interest in National Forest System lands within the Project No. 2100 boundary shown in Exhibit K of the FERC license to permit DPR to use, and “protect said lands in a manner necessary to administer them for recreation purposes and, to the extent permissible, to enforce all applicable laws and regulations thereon." The USFS is not interested in changing or terminating the agreement at this time, but will reevaluate the agreement during the next Forest Plan revision (pers. comm., Taylor 2003). It is the licensee's preference and intent that National Forest System lands within the Project No. 2100 boundary continue to be managed as part of LOSRA.

4.2.7 U.S. Bureau of Land Management

In general, BLM-managed lands in the project area contain semi-primitive roads with views of Lake Oroville. Several disjunct parcels within the project total about 3,852 acres (Figures 4.0-1, 4.0-2, and 4.0-3). While BLM is currently implementing a coordinated resource plan with DWR to manage the Lake Oroville watershed, surplus public lands within the study area receive very little active management by BLM (BLM 1993). Recreation use of these lands is managed by DPR as part of the LOSRA (pers. comm., K. Williams 2003). No formal arrangements between BLM and State agencies exist regarding management of the project area, except the FERC License. The lands within the FERC boundary, primarily within the LOSRA, have been withdrawn from entry under a variety of public land laws due to a designated reservation for the project (pers. comm., Berg 2003).

At an operational level, BLM has prioritized the following management objectives for lands in and near the project area (pers. comm., Berg 2003): (1) identify what lands are of specific interest to the State of California within the FERC boundary; (2) design the mechanism(s) to effectuate transfer of surplus federal lands to the State of California; and (3) complete such transfer.

BLM has communicated its interest to surplus properties with public jurisdictions. DPR, DWR, and the U.S. Bureau of Indian Affairs (BIA) (on behalf of four recognized First Nation tribes) have submitted applications to BLM for land transfer sites within the project area. However, the timing of future progress on these issues is unknown. Nevertheless, it is the licensee's intent that BLM-managed lands within the Project No. 2100 boundary continue to be managed as part of LOSRA, and that transfer of ownership to the State of California (under the Recreation and Public Purposes Act) occur when feasible.

4.2.8 Feather River Recreation and Park District

The FRRPD, established by Butte County in 1952 to provide recreation and park services to the residents of the City of Oroville and surrounding communities, is a special assessment district encompassing 700 square miles of southeastern Butte County (City of Oroville 1995; FRRPD 2002). The FRRPD owns or leases ten parks, three community buildings, two public pools, and several sports fields, playgrounds, picnic areas, and assorted park amenities, several of which are near or adjacent to the study area (City of Oroville 1995; FRRPD 2003). In addition to parks and recreation facilities, the FRRPD offers a variety of programs, including youth and adult sports leagues, summer day camps, and classes for youth, adults, and seniors. Classes range from sailing lessons, swimming lessons, and lifeguard training, including first aid and cardiopulmonary resuscitation (CPR), hunter safety, and a variety of dance classes (FRRPD 2003).

Although most FRRPD facilities are outside of the Project No. 2100 boundary (portions of the existing and planned expansion of Nelson Park are within the project boundary), FRRPD coordinates with DWR, DFG, and DBW to enhance the recreational opportunities available in and around the vicinity of the project (pers. comm., Lawrence 2003). Coordination with State agencies includes the FRRPD's leasing and management of several areas owned by DWR and DFG. The licensee proposes to continue and potentially expand the relationship with FRRPD as it relates to the aforementioned leased and managed lands, pursuant to existing agreements and any subsequent or revised agreements that may arise in both agencies' mutual interests (Appendix E).

4.2.9 State Water Contractors

The State Water Contractors (SWC) is a non-profit organization made up of 27 of the 29 urban and agricultural water suppliers in Northern California, San Francisco Bay Area,

San Joaquin Valley, Central Coast, and Southern California who receive water from the SWP and deliver it to approximately two-thirds of the State's population (DWR 2004). SWC formed in 1982 and, while primarily concerned with SWP operations and the FERC relicensing project, it also facilitates discussions among its members regarding the energy industry, fisheries, and topics related to the Bay-Delta. The organization represents the 27 agencies' interests and follows legislative and DWR decisions affecting water and costs of delivery.

Specific SWC objectives include the following:

- Timely completion of SWP facilities under construction;
- Proper and efficient operation of the SWP;
- Protection of water rights needed by the SWP;
- Review of litigation affecting the SWP;
- Presentation of the views of SWC members to legislative and administrative agencies, to the public generally and to other interested groups; and
- Development and maintenance of a public information program about the SWP (SWC 2004).

The 27 water contractors fund all water supply-related costs of the SWP for an allocation of approximately 3,000,000 af. These costs amounted to $866 million in 2003 (pers. comm., Coburn 2004). This represents about 94 percent of the annual costs for operation and maintenance of SWP facilities (the remaining costs are funded by the federal government for joint operation of the San Luis Facilities [3 percent], and by the California State General Fund for recreation and fish and wildlife enhancement [3 percent]). Contractors also fund about 89 percent of SWP capital expenditures, generally funded by bonds; repayment of the remaining 11 percent comes from the federal government for flood control (2 percent), the State General Fund for recreation and fish and wildlife enhancement per the Davis–Dolwig Act (5 percent), and the rest from miscellaneous sources (DWR 2004).

Full payments are made each year for fixed SWP costs regardless of the variations in water deliveries that occur from year to year. Fixed costs include those for operation, maintenance, and debt service. Contractors also pay costs that vary depending on the amount of water delivered during the year, such as the costs for energy used to pump water to their respective aqueducts (DWR 2004). The current long-term water supply contracts between the 29 SWP contractors and DWR are scheduled to terminate in 2035; however, they are expected to be renewed prior to expiration.

4.2.10 Concessionaires and Contractors

DPR and concessionaires have entered in to agreements to provide specific services in the project area as noted below.

Concessionaires

DPR contracts with concessionaires to provide additional services that support recreation in the LOSRA. Current DPR concessionaires located at LOSRA include the following but are subject to change:

- Bidwell Canyon Marina – Funtime, Fulltime, Inc., located at the south end of Lake Oroville in Bidwell Canyon offers a full-service marina including boat and houseboat rentals, mooring docks, slip and buoy rentals, shuttle service, dry boat storage, boat repair service, gasoline, sewer pump-out, snack bar/restaurant, bar serving liquor, boating supplies, sundries, and souvenirs.

- Lime Saddle Marina – Forever Resorts LLC, located at the north end of Lake Oroville at Lime Saddle, offers marina services including boat and houseboat rentals, mooring docks, slip and buoy rentals, shuttle service, dry boat storage, boat repair service, gasoline, sewer pump-out, boating supplies, sundries, and souvenirs.

- Advanced Diving Services, Inc. – Provides service anywhere within LOSRA and is contracted through 2009. Advanced Diving Services, Inc. provides hull cleaning, salvage services, deep water diving, and object or body recovery.

Contractors

Both DWR and DPR contract with various vendors and other business and governmental interests and authorities to provide some services. Important recreation-related contractors currently include (but are subject to change) the Department of Parks and Recreation Reservation System. DPR's campground and tours reservation system has been in place since 1970. The current vendor is ReserveAmerica, contractor to DPR for State Park System reservations Statewide. Reservations using this system can be made over the phone or through DPR's website and can be made 7 months in advance.

4.3 FERC LICENSE COORDINATION UNIT

DWR intends to have appropriate staff in Oroville to manage the terms and conditions of the new license. This unit, called the FERC License Coordination Unit (LCU), will serve three functions:

1. Manage the terms and conditions of the license;
2. Ensure compliance with the regulatory framework defined by FERC and other regulatory agencies; and
3. Provide a local point of contact for the community.

To ensure compliance with the terms and conditions of the new license, the LCU will manage the projects and programs required by the license. LCU staff will coordinate and manage construction and maintenance activities and conduct and manage monitoring programs.

To ensure regulatory compliance, the LCU will prepare correspondence to FERC and other agencies as required by the regulatory framework. Studies, reports, surveys, and permits will be prepared and managed locally by the LCU.

As the local point of contact for the community, the LCU will provide a single point of contact for interested parties to request information and/or to provide recommendations. The LCU will have the capacity to make decisions concerning the implementation of the terms of the license, and will provide a local resource for dispute resolution if needed.

To encourage and facilitate more local awareness and involvement in implementation of the terms and conditions of the new license and specifically the draft RMP, the LCU will be responsible for handling dispute resolution.

4.3.1 Dispute Resolution

Disputes associated with the new FERC license may be brought to the attention of the LCU. The LCU will investigate and evaluate disputes and recommend a course of action to resolve each dispute. The licensee will be the final arbitrator of license proposals and compliance disputes and, as such, will accept or deny proposed projects or expenditures as appropriate. Stakeholders may take unresolved disputes to FERC.

4.4 INTER-AGENCY/DEPARTMENTAL COORDINATION AND PLANNING

Because of the differences in the specific missions and responsibilities of various State agencies, communication among staff of each of the managing agencies is essential to ensure that recreation opportunities in the study area are adequately and efficiently provided to the public. Interagency coordination is important for recreation management issues that may arise around the timing of events and as they relate to facility conditions and reservoir levels. Clear divisions of responsibility are important for efficiency of O&M and to enable recreation managers to be prepared to manage unforeseen events.

The general responsibilities assigned to the respective State of California Departments of the Resources Agency, as they relate to SWP facilities, are articulated in the Davis-Dolwig Act (California Water Code Sections 11900-11925). The cooperative relationship between these Departments is further described in Resources Agency Order No. 6 (Appendix E). Local (project) staff from DWR, DPR, DFG, and DBW meet regularly to address interagency management, a staff forum termed Oroville Recreation Coordinating Agencies (ORCA). The ORCA forum will continue to meet periodically during each year, throughout the License term, to facilitate short- and intermediate-term interagency and inter-Departmental operations coordination and planning.

5.0 MANAGEMENT UNITS

For purposes of long-term recreation planning and monitoring, six geographic management units have been defined for the project area. These separate units represent distinct geographic areas, as well as distinct recreation experiences for visitors within the project area. These management units have been primarily designated for use in the Recreation Monitoring Program and are generally consistent with similar geographic divisions used during Project No. 2100 relicensing recreation studies. Data collected and analyzed within each of these separate units, as well as data compiled and analyzed for the entire project area, will help guide future RMP decision-making on a unit-by-unit basis. These six management units are presented in Figure 5.0-1 and are further described below:

- Lake Oroville (land area);
- Lake Oroville (reservoir surface water area with six sub-unit divisions);
- Diversion Pool (includes Feather River Fish Hatchery);
- Thermalito Forebay;
- Thermalito Afterbay; and
- Oroville Wildlife Area.

5.1 LAKE OROVILLE

The main management unit in the project area is Lake Oroville. These two units include a land component and a reservoir surface water area component.

5.1.1 Lake Oroville—Land

The Lake Oroville land management unit includes all of the large developed public RV and tent campgrounds including Bidwell Canyon, Loafer Creek, and Lime Saddle Campgrounds, as well as a number of small semi-primitive boat-in campsites, moored floating campsites, and "en route" campsites within parking areas. Camping data will be collected on a per-site or facility basis, as well as aggregated for all like or similar facility camping experiences within this management unit.

There are also a number of larger day use/picnic facilities within this management unit including Spillway, Bidwell Canyon, Loafer Creek, Lime Saddle, and Oroville Dam Overlook. Additionally, there are a number of larger developed boat ramps and/or marinas, smaller car-top boat ramps, and dispersed reservoir shoreline access sites within this management unit. Day use recreation data will again be collected on a per-site or facility basis, as well as aggregated for all like or similar facilities in this management unit.

5.1.2 Lake Oroville—Water

The Lake Oroville water management unit includes six reservoir surface (water area) subunit divisions:

- Main Basin;
- West Branch;
- Upper North Fork;
- Lower North Fork;
- Middle Fork; and
- South Fork.

Boat launching data will be collected and analyzed for each of the land-based sites described above on an access point basis (Figure 5.0-1), as well as compiled for the overall Lake Oroville reservoir area.

5.2 DIVERSION POOL

The Diversion Pool management unit is unique among the other geographic areas of the project in that is provides a semi-primitive recreation experience. Access is limited primarily to trail and non-motorized watercraft (electric boat motors are allowed) access. No camping is allowed in this management unit, only day use. Day use recreation data will be collected on a per-site basis (two new shoreline day use sites will be developed under the RMP) and on-water basis, as well as aggregated for the entire management unit. The Feather River Fish Hatchery site has been included in this management unit, although it is actually located within the Low Flow Channel of the Feather River.

5.3 THERMALITO FOREBAY

The Thermalito Forebay management unit (North and South) provides another unique recreation experience compared to the other geographic areas of the project. Its relatively stable pool level, near-town location, and developed day use facilities provide an experience that is much different compared to Lake Oroville. Access is good by existing roads, trails, and by motorized (South Forebay only) and non-motorized watercraft. No camping is allowed in this management unit, except en route RV camping in the North Forebay DUA. Day use recreation data will be collected on a per-site basis, as well as aggregated for the entire management unit.

5.4 THERMALITO AFTERBAY

The Thermalito Afterbay management unit (most portions are within the OWA) is similar to the Thermalito Forebay management unit, but also has unique differences including motorized watercraft use and greater focus on preservation and enhancement of wildlife habitat areas. It also has a relatively predictable pool level (on a daily basis, the Afterbay typically fluctuates between one and two feet, with changes more frequently in the one-foot range; on a weekly basis, the Afterbay is generally at its lowest elevation

on Monday and storage is increased over the week to reach a maximum elevation on Saturday), near-town location, and has a few developed day use facilities. There are also several undeveloped dispersed boat-in day use sites and a water-ski course. Access is good by existing roads, trails, and watercraft.

Primitive camping is allowed in a limited, designated area of this management unit. Day use recreation data will be collected on a per-site basis, as well as aggregated for the entire management unit.

5.5 OROVILLE WILDLIFE AREA

The Oroville Wildlife Area (OWA) management unit includes that area of the OWA currently managed by DFG (portions of the OWA are outside of the project boundary), but excludes the Thermalito Afterbay component (Figure 5.0-1). The OWA management unit is primarily a primitive wildlife area, but also provides visitors to the project area with a non-reservoir outdoor experience. The OWA allows for different outdoor recreation activities compared to the other management units, such as hunting, river-oriented fishing, and wildlife observation. Shoreline fishing at or near the Afterbay outlet within the OWA is one of the most popular fishing sites within the State. Access is provided by developed and primitive roads, as well as trails. In the future, camping will be allowed within a 40-acre site of this management unit. Day use and overnight camping data will be collected at defined sites or use areas on a per-site/area basis, as well as aggregated for the entire management unit.

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6.0 PROJECT RECREATION FACILITIES

This section presents existing and proposed recreation facility improvements and enhancements by type of site: campgrounds, BICs, DUAs, BRs, and trails and trailheads. Figure 1.0-2 identifies the locations of these recreational facilities and sites. Tables presented in this chapter summarize existing facility features at each site. Appendix A includes additional detail regarding proposed recreation measures, schedules, and estimated costs at each recreation facility within the FERC project boundary (Appendix B provides details for recreation facilities outside the FERC project boundary). Phasing is described in Appendix A in 10 year increments (L1 to L5) with the first ten years being referred to as L1, the second 10-year phase referred to as L2, etc. Detailed figures illustrating existing site layouts and preliminary conceptual locations or notations of proposed facility expansions, additions, or enhancements are presented in Appendix C. Existing and proposed trails, including trail use designations, are discussed in Appendix D.

6.1 CAMPGROUNDS

Project recreation facilities described in this section (and listed in Table 6.1-1) include:

- Bidwell Canyon Campground;
- Loafer Creek Campground;
- Loafer Creek Group Campground;
- Loafer Creek Equestrian Campground;
- Lime Saddle Campground;
- Lime Saddle Group Campground;
- Spillway RV “En Route” Campground;
- North Thermalito Forebay RV “En Route” Campground; and
- OWA Thermalito Afterbay Outlet Camping Area.

6.1.1 Bidwell Canyon Campground

Existing Resources: Bidwell Canyon is located along the southern shore of Lake Oroville, west of Oroville Dam. It is a fishing area as well as a base for many boaters. This facility has 75 campsites for either tents or RVs, all with full hookups. There is a seasonally-staffed booth at the entrance to greet visitors and collect fees. Two flush restrooms, piped water, six showers, shade trees, and fire rings with grills are available (Table 6.1-1). Bidwell Canyon Campground is one of the major attractions within the project area.

Proposed Actions and Enhancements: The licensee will construct a new replacement campground loop adjacent to the remaining “Gold Flat” loop (to mitigate for the loss of campground space due to expansion of Bidwell Marina parking facilities, Section 6.4.1). This action requires clearing, grading, and paving, as well as the installation of new campground improvements. An existing trail would need to be relocated in the campground expansion area (trail relocation is subject to future detailed design

Table 6.1-1. Campground and dispersed camping facilities.

Recreation Site	Overnight Use			Health & Safety									Other			
	Campsites with Table, Fire Ring, & Grill	Tent Pads	RV sites	Portable Toilets	Vault Toilets	Flush Toilets	Showers	Potable Water Available	Gray Water Sump	RV Dump Station	Trash Receptacles	Telephone	Shade Trees	Entrance Booth/Kiosk[1]	Amphitheater	Parking
Bidwell Canyon Campground	75	—	75[2]	—	—	2	6	Yes	—	—	3		Yes	1	—	4[3]
Lime Saddle Campground	44	—	16	—	—	6	4	Yes	—	1	6	2 (1 ADA)	Yes	1	—	9 (1 ADA)[3]
Lime Saddle Group Campground	6[4] (3 ADA)	—	—	—	—	3 (all ADA)	2 (all ADA)	Yes	—	—	2	—	Yes	1	—	16 (2 ADA)[3]
Loafer Creek Campground	137 (6 ADA)	137[5]	—	—	—	20 (12 ADA)	16	Yes	12	—	21	1	Yes	1	1	16[3]
Loafer Creek Group Campground	6[4]	30	—	—	—	8 (4 ADA)	8 (all ADA	Yes	—	—	5	—	Yes	1	—	48
Loafer Creek Equestrian Campground[6]	15	—	—	—	—	2 (1 ADA)	2 (1 ADA)	Yes	—	—	11	—	Yes	1	—	15
OWA Dispersed Camping: Area C	None	—	—	—	2 (all ADA)	—	—	—	—	—	Unknown	—	Yes	—	—	Undefined
Area F	None	—	—	—	1 (ADA)	—	—	—	—	—	Unknown	—	Yes	—	—	Undefined
North Forebay RV "En Route" Campground[7]	—	—	15	—	—	—	—	—	—	—	—	—	—	1	—	—
Spillway RV "En Route" Campground[7]	—	—	40	—	—	—	—	—	—	—	—	—	—	1	—	—

Note: The dash indicates that there is no facility or that the category does not apply.
[1] All entrance booths/kiosks are shared with other recreation facilities at that location (DUAs, BRs, other campgrounds).
[2] Campsites are generally used by RVs, but tent campers are allowed. Full hookups are available.
[3] Number of parking spaces in addition to the spaces provided at campground.
[4] Group campsites have tables, but no fire rings. Lime Saddle sites have BBQs, Loafer Creek sites do not.
[5] Campsites are generally used by tent campers, but RVs are allowed. No hookups are available.
[6] Other facilities specifically for horses are not listed in the table.
[7] "En Route" campgrounds consist of parking spaces with no hookups. North Forebay has 6 picnic tables surrounding the parking sites. See 6.1.8 and 6.1.9 for more information on facilities at these sites.
Source: EDAW 2003

analysis). Additional future capacity, when and if needed based on monitoring, would be accommodated at the nearby Loafer Creek Campground because of limited developable area at the Bidwell Canyon Campground area.

6.1.2 Loafer Creek Campground

Existing Resources: Loafer Creek Campground includes 137 campsites (6 ADA accessible) for tents and RVs (Table 6.1-1). There is a staffed entrance booth for visitor information and fee collection. Campsites have tables, fire rings with grills, tent pads, shade trees, and nearby drinking water. There are 20 flush toilets (12 ADA accessible), 16 showers with hot water, 12 gray water sumps, and a telephone.

Proposed Actions and Enhancements: If 38 campsites being relocated at the Bidwell Canyon Complex cannot be sited at that location during the initial phase (L1), then DWR will immediately fund the construction of up to 15 new RV campsites at the Loafer Creek Complex in compensation for potential lost campground capacity in the Bidwell Canyon Campground area. If these approximately 15 new individual campsites are constructed as a result of campsite relocations and potential lost campground capacity at Bidwell Canyon Campground, then up to approximately 35 additional new campsites (RV and/or tent) may be constructed in the future at Loafer Creek Campground.

Over the term of the new license in phases L2 to L5, based on monitoring results and a demonstrated need, the licensee may potentially construct up to a total of approximately 50 new individual RV and tent campsites in the future. This proposed action would be implemented only if results and threshold criteria have been met (Section 7.3). These additional facilities would be constructed adjacent to existing facilities and, for the most part, would be serviced by existing campground infrastructure (Table 6.1-1, Appendix C and Appendix A). In addition, the existing RV and tent campsite mix would be re-evaluated and campsite designs modified to meet current demand, if needed.

6.1.3 Loafer Creek Group Campground

Existing Resources: This area is adjacent to the Loafer Creek Campground and shares the staffed entrance booth for contacting visitors and collecting fees. There are six separate group sites, each able to accommodate 25 people, that share restrooms and showers (Table 6.1-1). There are 8 flush toilets (four ADA accessible) and 8 showers (also ADA accessible). Each unit has several tables, a sink with running water, shade trees, 5 large tent pads, nearby water spigots, and parking spaces for 8 vehicles.

Proposed Actions and Enhancements: The licensee will enhance ADA accessibility at the existing group campground.

The licensee will also construct two new separate group RV/tent campsites, each able to accommodate at least 25 people, that will share a new combination shower/restroom building. These additional group campsites will be constructed in the general vicinity of the existing group campsites (Figure 1.0-2) though they are likely to be constructed as

part of a new campground loop. In any case they will, for the most part, be serviced by existing area infrastructure (Appendix C). The existing group campground, as well as the new group campsites, will meet current standards for ADA accessibility.

In the future in phases L2 to L5, if needs warrant based on monitoring results, an additional 2 new group campsites, each able to accommodate at least 25 people, will be constructed adjacent to those described above or near the DUA. The two future sites, possibly near the existing day use area, will share a future combination shower/restroom building and, for the most part, will be serviced by existing area infrastructure (Figure 1.0-2, Appendix C). The monitoring and threshold criteria for determining and establishing future need is described in Section 7.3.

6.1.4 Loafer Creek Equestrian Campground

Existing Resources: This area is located adjacent to the campground and group camp, sharing the staffed entrance booth for contacting visitors and fee collection. The equestrian camp has 15 sites, each with horse trailer parking, a fire ring with cooking grill, and a table (Table 6.1-1). Additionally, each campsite has a corral to feed and secure horses. There are 2 flush toilets (one is ADA accessible) and 2 showers (one is ADA accessible). There is a horse washing area that can accommodate 2 horses at a time. In 2002, there were several upgrades to the site including an equestrian exercise ring, corrals with feeders, and the entrance road was paved. The Dan Beebe Trail can be accessed directly from the site (Figure 1.0-2).

Proposed Actions and Enhancements: The licensee will provide ADA-related enhancements at the Loafer Creek Equestrian Campground based on a future detailed design analysis.

6.1.5 Lime Saddle Campground

Existing Resources: Lime Saddle Campground is located on the western shoreline of the West Branch of the North Fork arm of Lake Oroville and is accessed from State Route (SR) 70 and Pentz Road. This is the newest of the project campgrounds, opened in July 2001. There is a staffed visitor information and fee-collection kiosk. Adjacent to the entrance kiosk are 2 telephones (one is ADA accessible) and 9 single-vehicle parking spaces (one is ADA accessible). Between the entrance kiosk and the individual campsites is an RV dump station with 2 stalls. The campground has 50 total campsites: 44 individual campsites (28 individual car/tent sites and 16 that are available for RVs with full hookups) and group sites (Section 6.1.6). Each individual campsite has a table and a fire ring with grill. There are 2 restroom/shower buildings located among the 44 campsites. Within the 2 buildings there are 6 flush toilets and 4 showers (Table 6.1-1). There are numerous water spigots, gray water sumps, and dumpsters throughout the campground.

Proposed Actions and Enhancements: Aside from continued O&M, no additional actions are proposed in phase L1 (first 10-year period). In the future in phases L2 to L5,

based on monitoring results and a demonstrated need, the licensee may potentially construct up to approximately 25 to 50 additional new RV and tent campsites in the future as needed based on monitoring results and threshold criteria being met (Section 7.3). These additional facilities will be constructed adjacent to existing facilities and, for the most part, will be serviced by existing campground infrastructure (Figure 1.0-2, Appendix C).

6.1.6 Lime Saddle Group Campground

Existing Resources: The group campground is located separate from the 44 individual campsites described above. Essentially, the group campground is composed of six individual sites in two groups, designed with a central parking and restroom/shower area that has an island in its center with a picnic table. The parking area has 16 single-vehicle parking sites (2 are ADA accessible) with 2 trash dumpsters (Table 6.1-1). The central restroom/shower building has 3 ADA accessible flush toilets and 2 ADA accessible showers. The group campground is split into 2 areas, Pinecone and Acorn. Each has a shade structure with 3 tables underneath along with a trash receptacle, large barbecue, and a water fountain/spigot. Among the Pinecone and Acorn sites, there are 6 campsites (3 are ADA accessible). Two of the ADA accessible campsites are in the Pinecone area and are accessed with a multi-level ADA accessible ramp system that affords a tent camper to be a bit away from the main area (shade structure). The ADA accessible campsite in the Acorn area is directly adjacent to the main area (shade structure).

Proposed Actions and Enhancements: Aside from continued O&M, no additional actions are proposed during the L1 phase. Based on monitoring results and a demonstrated need. The licensee may construct 1-2 new group RV/campsites in the future if needed based on monitoring results and threshold criteria being met (Section 7.3). These additional sites would be constructed adjacent to the existing tent/RV campground and, for the most part, would be serviced by existing campground infrastructure (Figure 1.0-2, Appendix C).

6.1.7 Spillway RV “En Route” Campground

Existing Resources: This campground consists of 40 parking spaces that have been reserved for RV “en route” (self-contained) camping (Table 6.1-1). These spaces are located in the upper parking lot at Spillway. There are no hookups for these spaces. Other facilities, including restrooms, located at Spillway are described in Section 6.4.4 - Spillway BR/DUA.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility. Based on low current and future projected use estimates, the number of designated sites could be modified. Furthermore, appropriate use of this area will be periodically reassessed as security concerns dictate. As long as the practice of en route camping in this area remains consistent with normal security practices, and there remains no significant cost to

continuing this recreation opportunity as it has become established, no immediate changes are proposed at this facility.

6.1.8 North Thermalito Forebay RV "En Route" Campground

Existing Resources: The North Forebay area covers roughly half (300 surface acres) of the Thermalito Forebay's 630 surface acres and hosts non-motorized boating and other recreational activities (DWR 2000). There are 15 "en route" (self-contained) RV parking spaces with no hookups (Table 6.1-1) adjacent to the popular day use area. Other facilities, including restrooms, at the North Forebay are described in Section 6.4.5 - North Thermalito Forebay BR/DUA.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.1.9 OWA Thermalito Afterbay Outlet Camping Area

Existing Resources: Located southwest of Lake Oroville, the OWA contains a series of ponds and levees adjacent to the Feather River. Fishing, hunting, nature study, and river-associated recreation are the primary activities at the Wildlife Area. This area is managed by DFG under a series of agreements with DWR The Thermalito Afterbay outlet is one of the most popular river fishing areas in the project area and the State, particularly during salmon runs.

There are an undetermined number of primitive campsites (places to park an RV or stake a tent) at an area adjacent to the Afterbay outlet (Figure 1.0-2) that is also used for day use. At Area C, on the north side of the outlet, there is an unimproved one-lane boat ramp, two ADA accessible vault toilet buildings, and several trash receptacles (Table 6.1-1). At Area F, on the south side of the outlet, there is an ADA accessible vault toilet building and several trash receptacles (Table 6.1-1). The OWA Thermalito Afterbay Outlet Camping Area also provides swimming and fishing access to the Feather River. A third OWA primitive camping area (Area G) was closed March 1, 2004 to help combat unlawful dumping in the area and to help eliminate non-recreational camping.

Proposed Actions and Enhancements: The licensee will construct new developed but primitive tent and RV campsites (no hookups provided) within a 40-acre area of the OWA adjacent to the northern parking and day use area. This new camping area would be within an existing disturbed area north of the Thermalito Afterbay outlet channel (Appendix C). Based on site constraints, a minimum of 20 campsites up to a maximum of 40 campsites will be developed initially. Campsites will include picnic tables, pole stoves, and gravel campsite spurs. Existing access roads will be re-graveled and signed with vehicle access barriers. Native arid landscaping will be planted or seeded to help restore disturbed areas and to increase opportunities for shade for use by visitors. Additional vault toilet buildings will be added to existing ones if and when use levels and the total number of future campsites warrant. Roadside directional signs will

be provided for easier locating of the new facilities. All site enhancements and improvements will be sited so as to minimize potential impacts to Valley Elderberry Longhorn Beetle habitat.

6.2 BOAT-IN CAMPGROUNDS AND FLOATING CAMPSITES

Boat-in campgrounds (BICs) are most usable when Lake Oroville storage is at higher pool levels (850 feet msl and above). At lower pool levels, the campsites are inconveniently far from the water; as there are no established pathways to the BICs, their use requires walking up steep hillsides if water levels are low. The boat-in camps do not generally receive visitors when the reservoir is below 850 feet msl. Visitor access will be restricted within the inundation zone to specific BIC's as appropriate during periods of low reservoir levels to minimize impacts to cultural resources.

Recreation facilities described this section (Table 6.2-1) include:

- Bloomer Cove BIC;
- Bloomer Knoll BIC;
- Bloomer Point BIC;
- Bloomer Group BIC;
- Craig Saddle BIC;
- Foreman Creek BIC;
- Goat Ranch BIC; and
- Floating Campsites.

Table 6.2-1. Boat-in and floating campsite facilities.

Recreation Site	Overnight Use	Health & Safety						Other		
	Campsites with Table, Fire Ring, & Grill	Pit Toilets	Vault Toilet Bldgs.	Chemical Toilets	Potable Water Available	Gray Water Sump	Trash Receptacles	Shade Trees	Self-registration Pay Station	BBQ Grills
Bloomer Cove BIC	5	2	—	—	—	—	6	Yes	—	—
Bloomer Knoll BIC	6	2	—	—	—	—	4	Yes	—	—
Bloomer Point BIC	25	2	2	—	—	—	14	Yes	1	—
Bloomer Group BIC	1	2	—	—	—	—	9	Yes	—	Unknown number
Craig Saddle BIC	18	2	2	—	Yes		19	Yes	1	—
Foreman Creek BIC	26	2	2	—	Yes	1	16	Yes	1	—
Goat Ranch BIC	5	2	2	—	—	—	5	Yes	—	—
Floating Campsites	10[1]	—	—	10	—	—	—	—	—	1 each

[1]Floating campsites have a table and grill, but no fire ring. They also have a sink, but no potable water.
Note: The dash indicates that there is no facility or that the category does not apply.
Source: DWR 2003

6.2.1 Bloomer Cove BIC

Existing Resources: Bloomer Cove is located on the North Fork arm of Lake Oroville (Figure 1.0-2). There are 5 individual campsites in this area with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 pit toilets, and 6 trash receptacles.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.2 Bloomer Knoll BIC

Existing Resources: This campground is adjacent to Bloomer Cove on the North Fork arm of Lake Oroville (Figure 1.0-2). There are 6 individual campsites in this area with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 pit toilets, and 4 trash receptacles.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.3 Bloomer Point BIC

Existing Resources: This campground is adjacent to Bloomer Cove on the North Fork arm of Lake Oroville (Figure 1.0-2). There are 25 individual campsites in this area with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 vault toilets and 2 pit toilets, 14 trash receptacles, and a self-registration pay station.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.4 Bloomer Group BIC

Existing Resources: This campground is adjacent to Bloomer Cove on the North Fork arm of Lake Oroville (Figure 1.0-2). There is 1 group campsite with a 75-person capacity. There are also several shared group barbecue cooking grills (Table 6.2-1). The site has shade trees, 2 pit toilets, and 9 trash receptacles.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.5 Craig Saddle BIC

Existing Resources: This campground is located between the Middle Fork and South Fork arms of Lake Oroville (Figure 1.0-2). There are 18 individual campsites in this area with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 vault toilets and 2 pit toilets, 19 trash receptacles, potable water, and a self-registration pay station.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.6 Foreman Creek BIC

Existing Resources: This campground is located at the north side of Lake Oroville, west of the Foreman Creek Car-top BR (Figure 1.0-2). There are 26 individual campsites in this area with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 vault toilets and 2 pit toilets, 16 trash receptacles, potable water, a gray water sump, and a self-registration pay station.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility. However, due to modifications proposed for the Foreman Creek Car-top BR, and rerouted access to surrounding day use lands, the Foreman Creek BIC facility may see increased informal day use and land-based overnight walk-in camping.

6.2.7 Goat Ranch BIC

Existing Resources: This campground is located on the North Fork arm Lake Oroville between the Bloomer campgrounds, where the West Branch splits off of the North Fork arm (Figure 1.0-2). The area has 5 individual campsites with tables and fire rings with cooking grills (Table 6.2-1). The site has shade trees, 2 vault toilets and 2 pit toilets, and 5 trash receptacles.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.2.8 Floating Campsites

Existing Resources: Lake Oroville has 10 boat-in floating campsites (Table 6.2-1). These popular floating campsites are dispersed among different areas of the reservoir, generally anchored in a protected cove. Each floating campsite is a two-story structure that can accommodate up to 15 people, with living space and amenities such as a gas cooking grill, table, sink, restroom, shelves, storage room, cabinets, and a sleeping area. The user must bring potable water, although sink water is provided (DPR 2000a). Floating campsites developed to this degree are not known to be available anywhere else in the West.

Proposed Actions and Enhancements: The licensee will relocate 2 or 3 existing floating campsites closer to the Lime Saddle area of Lake Oroville. These relocated existing floating campsites will be deployed so that they are more easily accessible from the Lime Saddle Marina and Boat Ramp (Figure 1.0-2). These relocated floating campsites will be operated and maintained in the same manner as the other existing floating campsites.

6.3 DAY USE AREAS

Recreation facilities discussed in this section (Table 6.3-1) include:

- Lake Oroville Visitors Center;
- Feather River Fish Hatchery;
- Oroville Dam;
- Floating Restrooms;
- Diversion Pool DUA;
- Aquatic Center;
- Model Aircraft Flying Facility;
- Clay Pit SVRA;
- Rabe Road Shooting Range;
- Lake Oroville Scenic Overlook; and
- OWA Thermalito Afterbay Outlet DUA.

The following DUAs are not discussed in this section, but with the associated boat ramps (BRs) in Section 6.4:

- Bidwell Canyon DUA;
- Loafer Creek DUA;
- Lime Saddle DUA;
- Spillway DUA;
- North Thermalito Forebay DUA;
- South Thermalito Forebay DUA; and
- Monument Hill DUA.

6.3.1 Lake Oroville Visitors Center

Existing Resources: Located east of Oroville Dam on Kelly Ridge, the 10,000 square-foot, award-winning Lake Oroville Visitors Center features exhibits on the engineering and construction of the hydropower and water supply facilities (Figure 1.0-2). Interpretive displays explain how Lake Oroville and the associated project area facilities distribute water and electrical power to their destinations (DWR 2000). Additionally, there are interpretive displays on the native culture and the natural resources of the area (DPR 2000a). The Visitors Center hosts individual visitors as well as large groups such as school fieldtrips. In addition to the informational displays inside the Visitors Center, there is a 47-foot viewing tower that provides a panoramic view of Lake Oroville and its surroundings. The Visitors Center is ADA accessible and has 18 picnic tables (10 ADA accessible), shade trees, drinking fountains, a gift shop, a telephone, 6 toilets (all ADA accessible), parking for 90 vehicles, and 17 spaces for either vehicle/trailer combinations or buses (Table 6.3-1). The Dan Beebe Trail can be accessed from the Visitors Center (Section 6.5.9).

Table 6.3-1. Day use area (DUA) and other recreation area facilities.

Recreation Area	Use	Shoreline Access	Day Use					Health & Safety						Other	
			Tables	BBQ	Shade Trees	Sun Shelters	Interpretation Displays	Vault Toilets	Portable Toilets	Flush Toilets	Drinking Water	Telephone	Trash Receptacles	Parking Spaces	Other Facilities
Lake Oroville Visitors Center	Day use trailhead access	No	18 (10 ADA)	—	Yes	—	Yes	—	—	6 (all ADA)	Yes	1	6	90 car & 17 car/ trailer	viewing tower, gift shop
Feather River Fish Hatchery	Fish viewing	Yes	1	—	Yes	—	Yes	—	—	2	Yes	1	Yes	100	viewing platform and window
Oroville Dam	Driving, sightseeing, walking, biking	Yes	8	—	—	—	Yes	—	—	4 (1 ADA)	Yes	—	1	20 approx.	—
Floating Restrooms		—	—	—	—	—	—	14	—	—	—	—	—	—	—
Diversion Pool DUAs	Non-motorized boating, hiking/walking, swimming	Yes	—	—	—	—	—	1	—	—	—	—	—	Road Parking	—
Aquatic Center	Non-motorized boating, storehouse for boats, area for holding classes	Yes	117	—	Yes	—	Yes	—		10 (3 ADA)[1]	Yes	1	Yes	217[1]	Pay Station[1]
Model Aircraft Flying Facility	Flying model aircraft	Yes	6	1	—	2	—	1	1	—	—	—	—	20 approx.	Runway
Clay Pit SVRA	OHV riding	No	—	—	—	—	—	—	—	—	—	—	—	20 approx.	—
Rabe Road Shooting Range	Range and target shooting	No	7	—	—	—	—	1	—	—	—	—	—	20 approx.	—
OWA Thermalito Afterbay Outlet DUA	Fishing and swimming	Yes	---	---	Yes	---	---	2	---	---	---	---	Yes	Undefined	---

[1] *Facilities are associated with the North Thermalito Forebay BR/DUA (Section 6.4.5).*
Note: The dash indicates that there is no facility or that the category does not apply.
Source: DWR 2003. Updated 2004

Proposed Actions and Enhancements: The licensee will provide some enhancements to existing interpretive materials, programs, and facilities at the Visitors Center. Potential future uses and activities at this existing facility will be discussed and considered as part of future development of the I&E Program in the draft RMP. Based upon monitoring results during L2 to L5 phases and determination of needs, the licensee will provide additional parking capacity at this facility in the future if and when needed.

6.3.2 Feather River Fish Hatchery

Existing Resources: Anadromous fish migration up the Feather River is stopped at the Fish Barrier Dam, just downstream from the Diversion Pool and Dam.
Salmon climb the fish ladder into the Feather River Fish Hatchery where DFG selects fish for breeding.

Recreation and public use facilities on the north bank of the Feather River include a visitor area with a landscaped parking lot, restrooms, and an observation platform overlooking the Diversion Dam and its flow over the dam (Table 6.3-1). There is an area with windows into the fish ladder, making it possible to observe fish as they swim up the ladder. Windows are also provided along the spawning building to allow visitors to watch the spawning process. A visitor observation area is also provided at the gathering and holding tanks.

The Feather River Fish Hatchery is ADA accessible. The amenities include designated parking areas, restrooms, and accessible ramps (Table 6.3-1). The ramps provide access to the viewing platform, viewing window, and the gathering tank at the top of the fish ladder.

Proposed Actions and Enhancements: The licensee will provide ongoing periodic updates of the interpretive materials and possible new interpretive signs and/or kiosks and paths. Otherwise, no changes are proposed at this facility. This site will be considered for additional enhancements during the full development of the I&E Program in the final RMP.

6.3.3 Oroville Dam Overlook DUAs

Existing Resources: Located on the southwest shoreline of the reservoir, the crest of Oroville Dam is used for driving and sightseeing, walking, jogging, bicycling, or rollerblading (Figure 1.0-2). Some fishing takes place at the edge and can be participated in at any reservoir level. Oroville Dam is the tallest earthfill dam in the nation with a height of 770 feet (DWR 2000). At night, lights accent the 6,920-foot-long roadway along the dam's crest.

The Oroville Dam Overlook DUAs are located on the east and west ends of the dam, all of which are east of the Spillway BR. There are picnic tables on the east and west ends (8 tables total). There are 4 flush toilets (one ADA accessible) at the east end of the

dam (Table 6.3-1). There is 1 drinking fountain. There are approximately 400 parking spaces across the top of the dam (2 are ADA accessible), but parking here has not been allowed since heightened security was implemented following the September 2001 terrorist attacks. Parking (approximately 20 vehicle spaces) remains open at the east end of the dam. Additionally, the DUA facilities at the western end of the dam were closed in the fall of 2002 for security reasons.

Proposed Actions and Enhancements: Aside from continued O&M and possible new interpretive signs and/or kiosks, no additional actions are proposed in the L1 phase. During the L2 to L5 phases, if monitoring results demonstrate a clear need, other day use improvements may be installed, including shade ramadas, 4-5 picnic tables, and interpretive panels (ADA accessible scenic overview). Up to 100 additional parking spaces with access paths/stairs may also be provided, if needed in the future, at an appropriate location.

6.3.4 Floating Restrooms

Existing Resources: To preserve water quality and provide convenience for boaters, DPR maintains 7 floating restrooms on Lake Oroville (Table 6.3-1). Floating restrooms in California are most often of a standard design provided by DBW, and are constructed on floating docks where several boats can tie up at the same time. Each floating restroom has 2 individual restrooms with vault-style toilets. At Lake Oroville, they are deployed in strategic and convenient positions around the reservoir.

Proposed Actions and Enhancements: Apart from periodic updates of the informational materials, and replacement of existing facilities as needed, no changes are proposed at these facilities.

6.3.5 Diversion Pool DUAs

Existing Resources: The Diversion Pool and its shoreline, located below Oroville Dam and above Thermalito Diversion Dam, are open for day use activities such as swimming, fishing, non-motorized boating, trail use, and picnicking (Figure 1.0-2, Table 6.3-1). The current Diversion Pool DUA (North) is located along Burma Road, which runs on the north and west sides of the Diversion Pool. Only non-motorized boats are allowed on the Diversion Pool (electric motors are also allowed). The only developed facility at this area is a vault toilet building; one small shoreline access point has been enhanced with gravel to facilitate car-top boat launching. The Burma Road is also a trail corridor. A second new DUA (South) is proposed along the Diversion Pool shoreline with access from the Lakeland Boulevard TA.

Proposed Actions and Enhancements: The licensee will enhance the existing (North) Diversion Pool DUA by installing 10 concrete picnic tables in suitable locations along Burma Road and upstream from the Diversion Dam. Each picnic table will be paired with a pole stove/grill (Appendix C).

An ADA accessible fishing platform or pier will be constructed at a suitable Diversion Pool location, such as along Burma Road near the vault toilet building in an area known for fishing success, or at the new south shoreline DUA.

DWR will enhance trail and vehicular access to the Diversion Pool (south shoreline) from the Lakeland Boulevard Trailhead Access (TA) by relocating and/or constructing a new road to the old railroad grade trail corridor north of the Union Pacific Railroad (UPRR) crossing of the Diversion Pool (Figure 1.0-2, Appendix C). The licensee will construct limited day use facilities on the old railroad grade to include a gravel parking area with space for vehicles pulling small trailers, vault toilet building, 10 picnic tables with pole stoves/grills, and pedestrian trail and car-top boater access to the water. The licensee will install fencing as appropriate to separate the access road and proposed day use facilities from the railroad tracks.

6.3.6 Aquatic Center

Existing Resources: The Aquatic Center at the North Thermalito Forebay BR/DUA (Table 6.3-1) is managed by DPR for the use of boating clubs and educational institutions (Figure 1.0-2). The site is accessed using the same road (Garden Drive) as North Thermalito Forebay. The 1,200 square-foot facility was constructed in 1995 to provide area sailing and rowing clubs with a boathouse and an area for holding classes (DWR 2000). In 2004, DPR entered into an agreement with California State University, Chico, to conduct water- and boating-related educational programs for students and other LOSRA visitors. Aquatic Center users generally access the Thermalito Forebay using one of the two boat ramps shared with other day use visitors.

DWR, DPR, and DBW are pursuing a plan to expand the Aquatic Center under the existing Amended Recreation Plan and current FERC License, to support the University-based programs. Additional storage is required to make adequate watercraft available at this facility; a 7,500 square-foot boat storage building is proposed to be added near the existing building (Figure 1.0-2). This building will provide program support and associated security for boats and equipment. Other near-term improvements include installation of a 16- by 60-foot low-freeboard floating dock attached to three new steel piles, accessed by a new 8- by 60-foot gangway.

Proposed Actions and Enhancements: The licensee will provide facility improvements to the Aquatic Center for basic needs. The licensee will not be involved in Aquatic Center staffing or its programs that are managed by others (California State University [CSU] Chico, or other educational institutions).

6.3.7 Model Aircraft Flying Facility

Existing Resources: Model aircraft enthusiasts have use of a 350- by 300-foot runway for take-offs and landings near North Wilbur Road at the Afterbay Canal (Figure 1.0-2). The site has a paved runway for model aircraft take-offs and landings that was upgraded in 2002, as well as a vault toilet building, 6 picnic tables, a barbecue, and 2

shade ramadas (Table 6.3-1). The site is located off North Wilbur Road, north of SR 162 with access just past the power canal that runs between Thermalito Forebay and Afterbay. Off North Wilbur Road, a gated, gravel road runs for approximately ¼ mile to the Model Aircraft Flying Facility. The area can be accessed from the water as well (boats using Thermalito Afterbay can beach at the site). The site is mainly used by Oroville Model Airplane Club members, with other access occasionally arranged for special groups, activities, or events.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials/bulletin boards, no changes are proposed at this facility. If vehicular damage is observed along the north side of the access road to this site in the future, barriers and/or fencing may be included as a routine O&M component to minimize or avoid potential impacts to vernal pools and wildlife habitat.

6.3.8 Clay Pit State Vehicular Recreation Area

Existing Resources: Located adjacent to the OWA and outside the Project No. 2100 boundary, the Clay Pit SVRA provides a riding area for off-highway vehicle (OHV) enthusiasts (Figure 1.0-2). The site is accessed from Larkin Road and is south of SR 162 and the Oroville Municipal Airport. The clay used to build Lake Oroville Dam was taken from this area. The resulting depression, a large shallow pit ringed with low hills, is the site of this 220-acre OHV recreation area. It is a motorcycle, all-terrain vehicle (ATV), and dune buggy use area (DPR 2000b). There is a well-marked entrance road that leads to a paved staging area used for loading and unloading OHVs (Table 6.3-1). Aside from the paved staging area and the entrance road, the entire site is one large open dirt area where OHVs (including trucks) can explore.

Proposed Actions and Enhancements: Located outside the Project No. 2100 boundary, the licensee will coordinate with DPR managers of the Clay Pit SVRA. Information directing OHV enthusiasts to this facility will be posted at all project recreation areas, and in the OWA, in order to help reduce illegal OHV use in adjacent and other areas. DWR will coordinate with DPR and DFG in the development and periodic update of consistent project-related information and interpretive materials.

6.3.9 Rabe Road Shooting Range

Existing Resources: This shooting range is located outside of the Project No. 2100 boundary and is managed by DFG. It is an unstaffed public shooting area with unmarked backstops (undefined places to place paper targets) reported to facilitate a range up to 500 yards in distance. It is technically a rifle range, but pistol use commonly occurs here as well. The shooting range is on Rabe Road, directly adjacent to the Clay Pit SVRA (Figure 1.0-2). Seven concrete picnic tables and a vault toilet building were installed at the gravel parking lot in spring 2003. There is a small sign that says “public shooting area” on Rabe Road.

Proposed Actions and Enhancements: As this facility is outside the Project No. 2100 boundary, the licensee proposes no changes to this facility. However, DWR will coordinate with DFG in the development and periodic updates of any posted information or interpretive materials available within the project area.

6.3.10 Lake Oroville Scenic Overlook (SR 162)

Existing Resources: Located along SR 162 immediately north of the highway bridge across the Middle Fork arm of Lake Oroville, this highway pullout provides a scenic overlook of Lake Oroville toward Bidwell Canyon. Recent enhancements to this overlook have been completed. The licensee has removed the old cyclone-style fencing and replaced it with a Caltrans-approved auto safety barrier. In addition, the licensee has provided two new interpretive signs at this location (see Appendix C).

Proposed Actions and Enhancements: Aside from continued O&M, no additional actions are proposed.

6.3.11 OWA Thermalito Afterbay Outlet DUA

Existing Resources: The existing use area provides unpaved vehicular and pedestrian day use access to the Feather River shoreline, a very popular river fishing site adjacent to the Thermalito Afterbay outlet. A vault toilet building and trash receptacles are provided in this area (Appendix C).

Proposed Actions and Enhancements: The licensee will designate a day use area near the river and away from the camping area and will install new picnic tables and pole stoves on the south side of the outlet channel. Additional roadside directional signs will be provided to aid users in locating this river access site. Existing access roads and parking will be re-graveled. Native arid landscaping or seeding will be provided to help revegetate disturbed areas and to provide some shade for visitors. This new development will be completed in conjunction with the design, permitting, and construction of the proposed new OWA Thermalito Afterbay Outlet Camping Area on the north side of the outlet channel.

6.4 BOAT RAMPS

The following boat ramps with associated day use areas are discussed in this section (Table 6.4-1):

- Bidwell Canyon BR/DUA;
- Loafer Creek BR/DUA;
- Lime Saddle BR/DUA;
- Spillway BR/DUA;
- North Thermalito Forebay BR/DUA;
- South Thermalito Forebay BR/DUA; and
- Monument Hill (Thermalito Afterbay) BR/DUA.

Table 6.4-1. Boat ramps and day use areas.

Recreation Area	Pay Station (self-registration or staffed booth)	Boating		Day Use						Health and Safety						Parking		
		Lanes on Boat Ramps (Useable Pool Levels)[1]	Other Facilities	Picnic Tables	BBQ Grills	Sun Shelters	Shade Trees	Other	Fish Cleaning Station	Portable Toilets	Flush Toilets	Drinking Water	Telephone	Trash Receptacles	Other	Car Parking Spaces	Car/Trailer Parking Spaces	Overflow Parking
Bidwell Canyon BR & DUA	1	7-H; 5-M; 2-4-L	1 Floating Dock, Marina	21	—	—	Yes	Bidwell Bar Historical Bridge & Tollhouse	1	—	8 (2 ADA)	Yes	1	20	1 Gray Water Sump	U	279 (2 ADA)	Yes, small gravel lot (30 cars)
Lime Saddle BR & DUA	1	4-M to H; 2-3-L	Marina	13 (4 ADA)	—	7	Yes	—	1	—	4 (all ADA)	Yes	1	11	—	45 (3 ADA)	131 (7 ADA)	Yes/100 car/ trailer spaces
Loafer Creek BR & DUA	1	8-M to H; 2-L	1 Floating Dock	30	17	—	Yes	1 Playground; Swim Area w/ Beach	—	—	10 (all ADA)	Yes	1	3	2 showers	DUA: 251 (5 ADA)	BR: 192 (6 ADA)	—
Monument Hill BR & DUA		2	1 Floating Dock	10	9	—	—	Swim Beach	1	—	4	—	—	8	—	10 (1 ADA)	39 (3 ADA)	Yes, large gravel lot
North Thermalito Forebay BR & DUA	1	2 ramps, 1 with 2 lanes, 1 with 3 lanes	1 Floating Dock at each ramp	117	37	21	Yes	1 Swim Area w/ Beach	—	7 (1 ADA)	6 (4 ADA)	Yes	1	18	—	251 (3 ADA)	26 (1 ADA)	Yes
South Thermalito Forebay BR & DUA	1	2	1 Floating Dock	10	10	—	Yes	—	1	1	—	—	—	6	—	U	U	—
Spillway BR & DUA	1	12-M to H; 8-L to M; 2-L	3 Floating Docks	6	—	6	Yes	—	1	—	6 (2 ADA)	Yes	—	7	—	118 Upper (8 ADA)	350 Upper (8 ADA), 264 Lower	—

Note: The dash indicates that there is no facility or that the category does not apply.
[1]U = Undesignated; L = Low; M = Medium; H = High, high reservoir levels are defined as those above 850 feet msl. Medium reservoir levels are those from 800 to 850 feet msl. Low reservoir levels are those that fall below 800 feet msl. These divisions are based on historic pool levels (DWR CDEC 2003).
Source: DWR 2003

The following smaller boat ramps without any associated day use areas are also discussed in this section (Table 6.4-2):

- Enterprise BR;
- Wilbur Road (Thermalito Afterbay) BR;
- Dark Canyon Car-top BR;
- Foreman Creek Car-top BR;
- Larkin Road (Thermalito Afterbay) Car-top BR;
- Nelson Bar Car-top BR;
- Stringtown Car-top BR;
- Vinton Gulch Car-top BR;
- Afterbay Outlet BR; and
- OWA Unimproved Boat Ramps/Thermalito Afterbay Outlet BR.

Table 6.4-2. Boat ramp facilities not associated with a DUA.

Recreation Area	Use		Boating	Health & Safety			Parking
	Activities	Pool Level when Boat Ramp is Available	Lanes on Boat Ramp	Portable Toilet	Vault Toilet	Trash Receptacles	Car/Trailer Parking Spaces
Afterbay Outlet BR	Boating	NA[1]	1	—	—	—	no designated parking: approx. 5-10
Enterprise BR	Boating	Medium to High	2	—	1	3	40
OWA Unimproved BRs	Boating	NA[1]	1	—	—	—	no designated parking: number varies depending on location
Wilbur Road BR	Day Use Boating	NA[1]	2	1	—	1	14 (1 ADA)
Dark Canyon Car-top BR	Car-Top Boating	Low to Medium	2	—	1	3	Undefined: approx. 15-30
Foreman Creek Car-top BR	Car-Top Boating	Low to High	2	—	—	1	Undefined: approx. 15-30 at low levels, approx. 7 at high levels
Larkin Road Car-top BR	Car-top Boating	NA[1]	—	—	1 (ADA)	1	Undefined: approx. 20
Nelson Bar Car-top BR	Car-Top Boating	High	—	—	1	2	Undefined: approx. 20
Stringtown Car-top BR	Car-Top Boating	Low to High	—	—	1	1	Undefined: approx. 6
Vinton Gulch Car-top BR	Car-Top Boating	High	1	—	1	2	no designated parking: approx. 10

[1] Not applicable. Water levels below the dam do not generally vary in a way that offers shoreline access.
Note: The dash indicates that there is no facility or that the category does not apply. Undefined means there is a designated parking area, but parking spaces are not delineated. No designated parking means there is roadside parking only.
Source: DWR 2003

6.4.1 Bidwell Canyon BR/DUA

Existing Resources: Located along the southern shore of the reservoir, east of the Oroville Dam, the boat ramp is a home base for boaters (Stienstra 2000) (Figure 1.0-2). The Bidwell Canyon complex is one of the major attractions in the project area and is also discussed in Section 6.1.1 – Bidwell Canyon Campground. There is a visitor information station and fee collection booth, as well as a full-service marina (Table 6.4-1). There are two areas with sun shelters, barbecues, and picnic tables (21 in total) at the DUA. The site has drinking water, 8 flush toilets (2 are ADA accessible), gray water sump, 7-lane boat ramp, telephone, and a fish cleaning station.

Generally, the Bidwell Canyon facilities are available at high, medium, and low reservoir levels. The lower boat ramp was extended to 700 feet msl in December 2002. There is parking for 279 vehicles/trailers in the upper parking lot (Table 6.4-1). The lower ramp has an unpaved parking area with space for about 30 vehicles/trailers. The Bidwell Bar Historical Suspension Bridge and Bidwell Bridge Toll House are located adjacent to the boat ramp parking lot.

The concessionaire-run marina offers boat rentals, groceries, fishing supplies, snack bar, approximately 280 berths and 400 mooring anchors, fuel dock, pumping station for boat holding tanks, boat storage, and trailer facilities with hookups (DWR 2000). Parking for 168 single-vehicles is available at the marina at full pool. Over 100 additional single-vehicle parking spaces at the marina become available in the inundation zone as the reservoir level recedes.

Proposed Actions and Enhancements: The licensee will construct approximately 215 new paved parking spaces (for vehicles with trailers) at up to three locations: 90 parking spaces at a new “Big Pine Loop” lot, 80 parking spaces at Bidwell Ramp #2 (existing gravel lot), and 45 parking spaces at a new Bidwell Ramp #3 (Appendix C).

DWR will construct a new marina parking lot on the site of the “Big Pine” loop of the existing campground and widen a narrow one-lane campground loop road (Figure 1.0-2, Appendix C). The new parking lot will provide approximately 90 single-vehicle parking spaces. This will necessitate the construction of a new replacement campground loop (see Section 6.1.1) adjacent to and south of the remaining “Gold Flat” loop (to mitigate for the loss of campground space due to expansion of Bidwell Marina parking facilities). This action requires clearing, grading, and paving at both sites.

The licensee proposes to coordinate with DBW to install two new floating docks to facilitate boat launching and retrieval at the Bidwell Canyon BR (only one dock will be deployed when reservoir level falls below elevation 785 feet, the approximate point at which only two lanes are usable). These docks will be periodically adjusted by DPR and/or the Bidwell Canyon Marina concessionaire as changing water levels warrant. The licensee will also coordinate with the concessionaire and DPR to increase ADA

accessibility to the extent feasible by the concessionaire at the marina, such as at the store.

This boat ramp will be extended to provide enhanced boat launching capability for Lake Oroville on a year-round basis. DWR will coordinate with DBW to extend a minimum of 3 boat ramp lanes down to 640 feet msl elevation and would provide approximately 45 parking spaces at the top of Ramp #3 (elevation approximately 750 ft.) with other additional parking along the length of Ramp #3.

Ramp lanes will be extended when the reservoir pool level drops to a sufficient level and for a sufficient timeframe to allow construction to occur, pursuant to normal project operations and permit acquisition. The ramp lanes would be built in segments as feasible. Permitting and other construction approvals will be completed in advance in anticipation of these extensions. Additional design and engineering work is still required by DBW.

During peak use when wait times indicate the need, both lanes at the Bidwell Canyon BR/DUA/Marina entry station will be in operation with the right had lane being used for season park pass holders at a minimum.

6.4.2 Loafer Creek BR/DUA

Existing Resources: The boat ramp shares the same visitor information and fee collection booth as the other Loafer Creek attractions (Section 6.1.5; Figure 1.0-2). There is an 8-lane boat ramp and a large parking area for 192 vehicle/trailer combinations (Table 6.4-1). All 8 lanes of the boat ramp are accessible to 800 feet msl. Two lanes are available as low as 775 feet msl. There are 2 ADA accessible flush toilets and a telephone at the boat ramp.

Located adjacent to the other Loafer Creek facilities (Section 6.1.5), the DUA offers opportunities for swimming, picnicking, and fishing. There are 30 picnic tables (some ADA accessible), 17 barbecues (including several large group grills), shade trees, swimming area with a beach at higher pool levels, playground area, 8 flush toilets (all ADA accessible), drinking fountains, showers, and parking for 251 vehicles, 5 of which are ADA accessible spaces (Table 6.4-1). The best opportunities for use of the DUA are at reservoir levels from 900 to 850 feet msl.

Proposed Actions and Enhancements: The licensee proposes to coordinate with DBW to install 2 new floating docks to facilitate boat launching and retrieval at the Loafer Creek BR (only 1 dock will be deployed when reservoir level falls below elevation 800 feet, the point at which only 2 lanes are usable). These docks will be periodically adjusted by DPR as changing water levels warrant (Appendix A).

To enhance opportunities for swimming and related day use, especially for periods when reservoir level recedes below elevation 850 feet msl, the licensee will prepare a

feasibility report investigating alternatives for extended-season warm-water swimming at Project No. 2100 sites including Loafer Creek (Appendices A and C). Alternatives to be reviewed may include but are not necessarily limited to: a surface water sub-impoundment ("swimming lagoon") on-site; a treated water hardened facility (on-site "pool"); an off-site swimming pool or water activity center; or a sub-impoundment/ swimming lagoon at an alternative project reservoir or recreation area. Because of the existing swim beach facility at Loafer Creek and the periodic high levels of use within the Loafer Creek Complex, this location will have priority over other sites. If a feasible and cost-effective solution is identified, then it will be implemented.

A fish cleaning station will be provided near the boat ramp; the location is to be determined and would be connected to the existing infrastructure where feasible.

6.4.3 Lime Saddle BR/DUA

Existing Resources: Located on the western shoreline of the West Branch of the North Fork arm of Lake Oroville, the Lime Saddle area is one of the major attractions at the Oroville Facilities (Figure 1.0-2). There is a staffed entrance kiosk where information is provided and fees are collected. Adjacent to the entrance kiosk are 4 single-vehicle parking spaces (1 is ADA accessible). At the Lime Saddle BR/DUA, there are 13 picnic tables (4 ADA accessible), 7 sun shelters, 4 flush toilets (all ADA accessible), drinking fountain, telephone, 4-lane boat ramp with 2 lanes extending down to elevation 702 feet msl, fish cleaning station, and trash receptacles (Table 6.4-1). These facilities are all located on the main parking level at the top of the boat ramp. In the main parking area there are 45 single-vehicle parking spaces (3 are ADA accessible) and 131 vehicle/ trailer spaces (7 are ADA accessible). Additionally, there is parking above the main level in an overflow lot suited for approximately 70 vehicle/trailer combination spaces, and another 64 single-vehicle parking spaces are available in a lot near the entrance kiosk (Table 6.4-1). A primary attraction in the Lime Saddle area is a concessionaire-run marina that offers boat gas, boat repair and supply shop, general store with bait and tackle, and pump-out station. The marina also offers rentals for houseboats, patio boats, fishing boats, and ski boats. Also available at the marina are short- and long-term overnight moorage, docks, and covered and open slips. A new concessionaire, under a contract solicited and managed by DPR, assumed operations of the marina in 2004.

Proposed Actions and Enhancements: An additional new 50-60 paved vehicle/trailer parking spaces may potentially be constructed adjacent to the existing boat ramp/marina parking area if monitoring results demonstrate a clear need during the L2 to L5 phases. In addition, day use picnic sites may be upgraded or expanded during the L2 to L5 phases based on monitoring results.

During the L1 phase, the licensee will coordinate with DBW to install one new floating dock to facilitate boat launching and retrieval at the Lime Saddle BR. Docks will be periodically adjusted by DPR and/or the Lime Saddle Marina concessionaire as

changing water levels warrant. In addition, ADA-related enhancements will be made at the Marina (store area) and nearby picnic sites.

The new Lime Saddle Marina concessionaire is responsible for any needed repairs to the marina facilities; the current or any future concessionaire will restore facilities to provide an appropriate and optimum level of service comparable to facilities and service available prior to a destructive 2002 wind storm. The licensee will also coordinate with the concessionaire and DPR to increase ADA accessibility to the extent feasible by the concessionaire (Appendix A).

The licensee will investigate the feasibility of enhancing opportunities for swimming and related day use (Appendix A), especially for periods when reservoir level recedes below elevation 850 feet msl, in the Parrish Cove area (between Lime Saddle Marina and Campground) and at other Project No. 2100 sites. A potential new swimming facility at the Loafer Creek DUA would have priority over Lime Saddle (Section 6.4.2).

Based upon the results of the swim feasibility study, monitoring results during L2 to L5 phases, and determination of a sustained need, the licensee will provide a new swim facility at this site (assuming a new swim facility has already been constructed at the Loafer Creek Complex). During the L2 to L5 phases, if monitoring results demonstrate a sustained need, the licensee will provide renovated and/or new day use/picnic sites with picnic tables, pole stoves, and shade armadas at the two Boat Ramp/Marina day use areas. Additionally, based on monitoring results and a demonstrated sustained need during the L2 to L5 phases, the licensee will provide a new cove day use/picnic area with picnic tables, armadas, and pole stoves, and a new non-motorized, multiple-use trail linking the existing Campground with the existing Marina/Boat Ramp area around Parrish Cove.

6.4.4 Spillway BR/DUA

Existing Resources: This is the largest boat ramp facility at Lake Oroville, adjacent to the right abutment of Oroville Dam (Figure 1.0-2). Development here consists of two stages of multi-lane boat ramps. One stage of ramps has 8 lanes and can be used during low to medium water levels, while the other has 12 lanes and can be used during medium to high water. The 8-lane ramp is separate from the 12-lane ramp, and each has its own accompanying parking lot. During high water, the lower 8-lane ramp and its parking lot are submerged. The lower 8-lane boat ramp was extended to 695 feet msl in January 2003.

The site has a seasonally-staffed visitor information and fee collection booth. The site has 6 flush toilets (2 ADA accessible), drinking water, a fish cleaning station, and picnic sites (6 tables) with shade trees and sun shelters (Table 6.4-1). The upper lot has 350 vehicle/trailer parking spaces, 40 of which have been set aside for “en route” (self-contained) RV camping (Section 6.1.7). The main ramp has spaces for a maximum of 75 vehicles/trailers available at medium and low pool levels. There are 118 single-

vehicle parking spaces (8 ADA accessible) in the upper lot. The shoreline access allows for fishing at all reservoir levels.

Proposed Actions and Enhancements: The licensee will provide an additional boarding dock to maximize boat launching capacity during the L1 phase. The existing concession contract for the Bidwell Canyon Marina includes an option to provide limited marina mooring and service facilities at the Spillway BR. The licensee will coordinate with DPR and its marina service concessionaire(s) at any future time if the concessionaire demonstrates the interest and ability to provide such service. Coordination will be for the purposes of ensuring the safety of Oroville Dam and protection and enhancement of recreation and natural resources in the Spillway area.

6.4.5 North Thermalito Forebay BR/DUA

Existing Resources: The North Thermalito Forebay hosts non-motorized boating and other recreational activities (DWR 2000) (Figure 1.0-2). The North Thermalito Forebay BR/DUA has a seasonally staffed visitor information and fee collection booth and 2 paved boat ramps, 1 with 2 lanes and 1 with 3 lanes (Table 6.4-1). There are 6 flush toilets (4 are ADA accessible) and 251 single-vehicle parking spaces (3 are ADA accessible). The site also has 26 vehicle/trailer parking spaces (1 is ADA accessible). Additional parking is available along the south side of the picnic area. The DUA has a swimming beach, large picnic area with 117 tables, shared barbecue grills, shade trees, drinking faucets, and telephone. There are additional picnic sites near the Aquatic Center and paved trail that circles the lagoon. The interpretive displays have been recently renovated (pers. comm., S. Feazel 2003).

Proposed Actions and Enhancements: Other than enhanced non-motorized trail opportunities in the vicinity, no specific additions are proposed to the DUA or boat ramp facilities. Enhanced non-motorized trail opportunities at the Forebay would be designed to minimize or avoid potential impacts to and/or loss of wetland and giant garter snake habitat. Existing opportunities at this site are expected to be enhanced by new services provided by the tenant of the existing and expanded Aquatic Center (Section 6.3.6).

The licensee will conduct a feasibility study to evaluate warmer water swimming options (that will also maintain adequate swimming water quality) at this site as well as other Project No. 2100 locations. In addition, water quality will be monitored and maintained in the swimming cove.

A fish cleaning station will be provided as well, assuming that this new facility may be connected to the existing infrastructure where feasible.

6.4.6 South Thermalito Forebay BR/DUA

Existing Resources: Located at the southern end of the Thermalito Forebay, this recreational site has a self-registration pay station, a 2-lane boat ramp, 10 picnic tables, 10 barbecues, shade trees, vault toilet building, and a fish cleaning station (Figure 1.0-

2). There is a graded and graveled parking area approximately 60 by 60 yards near the boat ramp and an undetermined number of parking spaces near the picnic tables (Table 6.4-1).

Power boating, limited to about 330 acres of the Thermalito Forebay's 630-acre pool, and fishing are the South Forebay's main recreation uses (DWR 2000). Shoreline swimming also takes place at this DUA. The interpretive displays have been recently renovated (pers. comm., S. Feazel 2003).

Proposed Actions and Enhancements: The licensee proposes to coordinate with DPR to improve a portion (approximately 100 linear feet) of the existing shoreline for swimming and related recreation use by the placement of approximately 6 inches of sand between elevations 220 and 230 feet msl (Appendix A). Additional picnic tables, with pole stoves and shade ramadas, will be installed at the back of the beach area. Additional landscaping with shade trees and shrubs will be added to this site to enhance the site for day users. Adjacent to ADA accessible parking, an ADA accessible fishing platform or pier will be constructed. To enhance safety of swimmers, buoys will be placed 200 feet from shore to designate a 5-mph zone for boaters and personal watercraft (PWC) users. All site enhancements would be sited so as to minimize or avoid potential impacts to vernal pools.

6.4.7 Monument Hill BR/DUA

Existing Resources: With 17 miles of shoreline and 4,300 surface acres of water, the Thermalito Afterbay is open for boating, swimming, fishing, picnicking, and limited hunting (DWR 2000). The surface and shoreline are within the OWA, but recreation facilities and boat ramps are managed by DWR.

A 2-lane boat ramp with floating dock is available at the Monument Hill site on the eastern shoreline of the Afterbay (Figure 1.0-2). There are 10 picnic tables, 9 barbecues, 4 flush toilets (one is ADA accessible but is not signed as such), fish cleaning station, and swimming beach. There are 10 single-vehicle parking spaces (1 is ADA accessible) and 39 vehicle/trailer combination spaces (3 are ADA accessible). Additionally, there is a graded and graveled parking area approximately 60 by 60 yards in area (Table 6.4-1).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility at this time.

6.4.8 Enterprise BR

Existing Resources: The Enterprise BR is located on the South Fork arm of Lake Oroville (Figure 1.0-2). It has a 2-lane boat ramp that can be used during medium and high reservoir levels (the end of the ramp is at approximately 830 feet msl). When the reservoir is below 830 feet msl, the site is closed to protect cultural resources. Fishing and swimming also take place along the shoreline at this site. There are 40

vehicle/trailer parking spaces (Table 6.4-2). A new vault toilet building was installed in 2003.

Proposed Actions and Enhancements: The licensee will coordinate with DBW to develop a low-water ramp at the Enterprise BR, beginning at or near the foot of the existing ramp, and extending to about 750 feet msl elevation (Appendix A). The exact alignment will be dependent upon completion of detailed cultural resource surveys and engineering studies. An alignment will be chosen to avoid or minimize impacts to cultural resources. Facility amenities will include a vault toilet building (recently installed as an Interim Project), up to 10 picnic tables with pole stoves/grills, and a new adjustable boarding/courtesy dock in the middle of both the existing and extended boat ramps. The recreational improvements at this site will also be located to avoid or minimize impacts to environmentally sensitive areas and will further protect these resources through the restriction (by fencing, barriers, and/or signs) of recreational activities to the improved facilities.

6.4.9 Wilbur Road BR

Existing Resources: The Wilbur Road BR consists of a 2-lane paved boat ramp, dock, parking lot able to accommodate 14 vehicle/trailer combination spaces (1 is ADA accessible space), and vault toilet building (Table 6.4-2). In addition to the designated boat ramp, informal boat launching occurs at several unimproved areas between this site and SR 162. These informal boat launching areas are often accessed with trailers, yet some are only suited for car-top launching.

Proposed Actions and Enhancements: Waters in proximity to the Wilbur Road BR are proposed to be subject to a new 5-mph boating speed limit imposed on the portion of the Afterbay north of SR 162 (Appendix A). It is not known how this localized restriction will affect use of the Wilbur Road BR. New roadside directional signs will be provided for easier locating of this facility by visitors.

6.4.10 Dark Canyon Car-Top BR

Existing Resources: Dark Canyon Car-top BR is located on the West Branch of the North Fork arm of Lake Oroville (Figure 1.0-2). The single-lane boat ramp is used at low to high reservoir levels. There is a paved parking lot (approximately 20 yards square that can accommodate between 15 and 30 vehicles). There are 3 pull-out areas between the parking lot and the end of the boat ramp. There is a defunct vault toilet building and trash receptacles at this site (Table 6.4-2).

Proposed Actions and Enhancements: The licensee will replace the existing, defunct vault toilet building at this location with a new structure (Appendix A). New roadside directional signs will be provided for easier locating of this facility by visitors.

6.4.11 Foreman Creek Car-Top BR

Existing Resources: Foreman Creek Car-top BR is located on the north side of the main basin of Lake Oroville (Figure 1.0-2). The 2-lane boat ramp can be used at all reservoir levels. Boating, fishing, and swimming all take place at this site. When reservoir levels fall below 800 feet msl, the site is closed at night and additional security is present during the day to protect cultural resources. Roped-off parking areas accommodate approximately 15 to 30 vehicles/trailers. At high reservoir elevations, there is only roadside parking, which will accommodate approximately 7 vehicles. There is no vault toilet building and only 1 trash receptacle at this site (Table 6.4-2).

Proposed Actions and Enhancements: In coordination with implementation of a future draft Historic Properties Management Plan (HPMP), the licensee will take recommended actions to reroute visitor use away from cultural resources. The licensee will install a vault toilet building, interpretive signage, and 5 to 10 picnic tables at a suitable scenic promontory near the high water line (Appendices A and C).

6.4.12 Larkin Road Car-Top BR

Existing Resources: The Larkin Road Car-top BR has a graded and graveled car-top boat ramp, a paved lot (approximately 50 by 50 yards, which can accommodate about 20 vehicles/trailers), a new single vault toilet building, and trash dumpster (Table 6.4-2). In addition to the designated launching area, there are 4 often-used access points that are not graded or graveled. There are dirt roads that lead to all 4 of these informal but regularly used launching areas.

Proposed Actions and Enhancements: The licensee will improve a portion (approximately 100 linear feet) of the existing shoreline for swimming and related recreation use by the placement of approximately 6 inches of sand between elevations 132 feet and 125 feet msl (Appendix A). Improvements will be designed to avoid vernal pools and to minimize potential loss of Giant Garter snake habitat. Five to ten picnic tables, with pole stoves/grills and shade ramadas, will be installed at the back of the beach area. To enhance safety of swimmers, buoys will be placed 200 feet from shore to designate a 5-mph no wake zone for boaters and PWC users. New roadside directional signs will be provided for easier locating of this facility.

6.4.13 Nelson Bar Car-Top BR

Existing Resources: Nelson Bar Car-top BR is located on the West Branch of the North Fork arm of Lake Oroville (Figure 1.0-2). An improved cement surface extends to about 825 feet msl; small trailers are occasionally used to launch at high reservoir levels. The site has a gravel parking lot (approximately 60 by 60 yards that can accommodate 20 vehicles/trailers) at elevation 894 feet msl. There are 3 pull-out/turnaround areas between the parking lot and the end of the boat ramp. There is 1 vault toilet building (not ADA accessible) and 2 trash receptacles (Table 6.4-2).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no substantive changes are proposed at this facility. The licensee will install a sign, barrier, and/or gate at the terminus of the boat ramp during lowered reservoir elevations for safety purposes. The old roadbed in the inundation zone, below the improved concrete ramp surface, will not be maintained and may become problematic for launching at low pool.

6.4.14 Stringtown Car-Top BR

Existing Resources: Stringtown Car-top BR is located on the South Fork arm of Lake Oroville (Figure 1.0-2). The boat ramp can be used at all reservoir levels but can become difficult below about 866 feet msl, where the improved concrete ramp ends and the unmaintained old roadbed (a former County road) continues into the inundation zone. There is space to park approximately 6 vehicles/trailers near the beginning of the boat ramp and a few other roadside parking areas. Visitors also fish and swim at this site. There is a vault toilet building (non-ADA accessible) and 1 trash receptacle (Table 6.4-2).

Proposed Actions and Enhancements: The licensee will install a sign, barrier, and/or gate at the terminus of the boat ramp during lowered reservoir elevations for safety purposes. The old roadbed in the inundation zone is not maintained and may become problematic for launching at low pool. Additional roadside signage will be provided to assist visitors to more easily locate this site.

6.4.15 Vinton Gulch Car-Top BR

Existing Resources: Vinton Gulch Car-top BR is located on the West Branch of the North Fork arm of Lake Oroville (Figure 1.0-2). The single-lane boat ramp is typically not used at low or medium reservoir levels. In addition to boat launching, shoreline fishing also takes place at Vinton Gulch. There is no designated parking area; however, roadside parking can accommodate approximately 10 vehicles (more at lower water levels). The site has 1 vault toilet building (not ADA accessible) and 2 trash receptacles (Table 6.4-2).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.4.16 OWA Thermalito Afterbay Outlet BR

Existing Resources: The Afterbay Outlet BR is located upstream (northeast) of the Afterbay outlet on the Feather River, within the OWA boundary (Figure 1.0-2). There is no designated parking area; however, roadside parking can accommodate approximately 5 to 10 vehicles (Table 6.4-2). There are no facilities such as restrooms or trash receptacles at the boat ramp. The ramp is a gravel/dirt ramp that can be used to launch boats using a trailer; four-wheel drive vehicles are advised when the ramp is muddy (typically after rains).

Proposed Actions and Enhancements: No changes are proposed at this boat ramp. However, the existing boat ramp will be upgraded and paved parking developed, possibly as early as 2005.

6.4.17 OWA Unimproved Boat Ramps

Existing Resources: There are several unimproved boat ramps within the OWA, including ramps located along the Feather River near the Vance Avenue and Palm Avenue entrances to the OWA. These ramps are unpaved gravel put-ins that users have expanded to use as boat ramps. Both car-top and trailer launching occurs at many of these ramps. There are no facilities or designated parking associated with any of the ramps.

There are also two unimproved boat ramps (not graded or graveled) on the north end of One Mile Pond; there is also an unimproved boat ramp (not graded or graveled) on the south end of One Mile Pond.

Proposed Actions and Enhancements: No changes are proposed at unimproved boat ramps in this project management unit.

6.5 TRAILS AND TRAILHEADS

Appropriate use of project trails has been an issue of public controversy for several years. DWR and DPR have endeavored to collect and evaluate public comment through a number of forums, including public meetings, stakeholder working groups, public review of Statewide trails planning documents and a LOSRA-specific draft General Plan, and a Trails Focus Group convened during Relicensing Settlement negotiations. A Non-Motorized Trails Management Program (Appendix D) describes and illustrates existing Project No. 2100 trail segments, their current and proposed future use designations, and proposed new trail alignments. Trail use designations of both existing and proposed new trail segments are defined.

The trail system in the study area provides many miles of trails for a variety of uses including mountain biking, horseback riding, and hiking (pers. comm., T. McBride 2003). Several trails have been upgraded to meet ADA accessibility standards for slope and surface. There are a total of 12 miles of ADA accessible trails within the study area. Table 6.5-1 lists each of the trailhead access sites and the trails, providing miles of trail, allowable uses, number of parking spaces, number of restrooms, and garbage receptacles. Appendices C and D and Figure 1.0-2 provide maps of these trails that are discussed (excluding the Feather Falls Trail).

The nearby Plumas National Forest (and portions of Lassen National Forest) provides many opportunities for hiking, mountain biking, and equestrian uses. The Feather Falls Trail is outside of the study area but at times can be accessed from the reservoir and is informally associated with recreation in the project area. The Pacific Crest Trail (also

not in the project area) crosses the upstream Middle Fork Feather River approximately 25 miles northeast of Lake Oroville.

DPR has conducted extensive trails planning in the State over the last 70 years. DPR houses a Statewide Trails Office that implements the mission and goals created by DPR for trails in the State. DWR and DPR share the management responsibility for trails within the LOSRA.

Facilities at most of the trailheads typically consist of roadside or designated gravel parking, some locations with portable toilets or vault toilet buildings, and the trails themselves.

Trailheads discussed in this section (Table 6.5-1) include:

- East Hamilton Road Trailhead Access (TA);
- Toland Road TA;
- Tres Vias Road TA;
- Lakeland Boulevard TA; and
- Saddle Dam TA.

In addition, trails discussed in this section (Table 6.5-1) include:

- Bidwell Canyon Trail;
- Brad B. Freeman Trail;
- Chaparral Interpretive Trail;
- Dan Beebe Trail;
- Feather Falls Trail;
- Lime Saddle Trail;
- Loafer Creek Day Use/Campground Trail;
- Loafer Creek Loop Trail;
- Sewim Bo Trail;
- OWA Trails;
- Potter’s Ravine Trail;
- Roy Rogers Trail; and
- Wyk Island Trail.

Table 6.5-1. Trailhead access facilities and trails.

Trail Facility	Use		Access	Health & Safety	
	Miles of Trail	Allowable Uses	Vehicle and Vehicle/Trailer Parking Spaces	Toilets	Trash Receptacles
Trailhead Access Sites					
East Hamilton Rd Trailhead Access	-	-	Approx 5 veh.	0	0
Toland Road Trailhead Access	-	-	Undesignated; ~ 10 vehicles	0	0
Tres Vias Rd Trailhead Access	-	-	Undesignated; ~ 10 vehicles	0	0
Lakeland Blvd Trailhead Access	-	-	Undesignated; ~30 vehicles, ~10 veh./trailers	0	0
Saddle Dam Trailhead Access	-	-	Undesignated; ~40 vehicles, ~15 veh./trailers	1	1
Trails					
Bidwell Canyon Trail	4.9	Bicycles, Hiking	477[1]	2[1]	3[1]
Brad B. Freeman Trail	41.0	Bicycles, Hiking[2]	Various	-	-
Chaparral Interpretive Trail	0.2	Pedestrian	107[3]	2[3]	6[3]
Dan Beebe Trail	14.3	Equestrian, Hiking	Various	-	-
Feather Falls Trail[4]	4.5	Multiple-use	Approx. 50	1	1
Loafer Creek Day Use/Campground Trail	1.7	Hiking Only	251[5]	2[5]	2[5]
Loafer Creek Loop Trail	3.2	Equestrian, Hiking[6]	251[7]	1[7]	11[7]
Sewim Bo Trail	0.5	Hiking Only	Unknown	Unknown	Unknown
OWA Trails	Unknown	Multiple-use	Various	Unknown	Unknown
Potter's Ravine Trail	5.5	Multiple-use	468[8]	2[8]	1[8]
Roy Rogers Trail	4.0	Equestrian, Hiking[6]	251[5]	2[5]	2[5]
Wyk Island Trail	0.2	Hiking Only	477[1]	4[1]	3[1]
New Trail Construction (Appendix D)	---	---	---	---	---

[1] In the Bidwell Canyon area.
[2] Horses currently allowed on some segments, proposed for others.
[3] At the Lake Oroville Visitors Center.
[4] Not within the Project 2100 Boundary.
[5] In the Loafer Creek Day Use Area.
[6] Portions proposed to be multiple-use.
[7] In the northern Loafer Creek area.
[8] At the Spillway area (upper parking area).
Note: The dash indicates that there is no facility or that the category does not apply.
Source: pers. comm., T. McBride 2003. Updated by EDAW 2004.

6.5.1 East Hamilton Road Trailhead Access

Existing Resources: East Hamilton Road TA connects to the Brad B. Freeman Trail. There is a picnic table and a small gravel parking area that fits approximately 5 vehicles (Table 6.5-1).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.5.2 Toland Road Trailhead Access

Existing Resources: The Brad B. Freeman Trail can be accessed from the Toland Road TA at the northwest corner of the Afterbay. This trailhead is gated with roadside parking only. There are no developed facilities at this site (Table 6.5-1).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.5.3 Tres Vias Trailhead Access

Existing Resources: The Tres Vias Road TA connects to the Brad B. Freeman Trail about 1.5 miles directly to the east of the Toland Road TA north of the Thermalito Afterbay. This access area consists of a dirt lot and dirt road/trail at the Thermalito Afterbay. There are no developed facilities such as vault toilet buildings or picnic tables at this site (Table 6.5-1).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.5.4 Lakeland Boulevard Trailhead Access

Existing Resources: The Lakeland Boulevard TA is located east of the Diversion Pool, near the Diversion Dam and upstream from the Low Flow Channel of the Feather River. The site is unpaved and provides parking for trail access that is commonly used by equestrians (Table 6.5-1). There is no developed shoreline access at the site. The gate to the site is locked from sunset to dawn. A Union Pacific Railroad line is adjacent to this trailhead access area. Signs advise visitors not to trespass on the tracks.

Proposed Actions and Enhancements: DWR proposes to create vehicle access and enhanced trailhead and day use access to the Diversion Pool (new south side DUA) as previously described (Section 6.3.5). The existing trailhead parking will be retained at the Lakeland Boulevard TA.

6.5.5 Saddle Dam Trailhead Access

Existing Resources: The Saddle Dam TA provides access to the Dan Beebe Trail. Located on the southeast side of Kelly Ridge, the Saddle Dam TA consists of a recently regraded and re-graveled parking area able to accommodate up to approximately 10 to

15 vehicle/trailer combinations if parked efficiently (Table 6.5-1). This site provides a convenient location to off-load horses and to access the nearby equestrian trail. Also recently added (as Interim Projects) at the site are trash receptacles, vault toilet building, hitching posts, and shade trees.

Proposed Actions and Enhancements: The licensee will install an additional access trail from the trailhead/parking area to the Lake Oroville shoreline.

6.5.6 Bidwell Canyon Trail

Existing Resources: The 4.9-mile Bidwell Canyon Trail can be accessed from the Bidwell Canyon BR parking area. The latter has 279 vehicle/trailer parking spaces (Table 6.5-1). The Bidwell Canyon Trail meets ADA accessibility requirements and is designated for hiking and bicycling. The trail is considered to be in a foothill setting and provides a rural experience.

Proposed Actions and Enhancements: Trail use designations will be revised (Appendix D) to allow equestrian use. Relocation of a portion of the existing Bidwell Campground to provide additional boat ramp/marina parking in the Bidwell Canyon area will necessitate the relocation of a segment of this trail. During detailed site design of the new campground loop, this trail will be relocated nearby with appropriate vegetative buffer and/or fencing provided where possible, subject to topographic and other site limitations.

6.5.7 Brad B. Freeman Trail

Existing Resources: The Brad B. Freeman Trail provides a 41-mile loop of scenic off-road recreation, primarily for all-terrain bikes (Table 6.5-1). The trail circumnavigates the Thermalito Forebay, Thermalito Afterbay, and the Diversion Pool, and crosses the OWA, as well as the crest of Oroville Dam. About 30 miles of trail are flat but include some rolling terrain. Steep grades can be found on either side of the dam, within 1 mile of Lake Oroville. Although some of the trail is designated multiple-use, no horses are allowed on several segments; thus, the utility of the trail to provide a "loop" is only consistent with hiking and bicycle use.

Proposed Actions and Enhancements: Trail use designations will be revised within specific trail segments (Appendix D) to allow equestrian use. The licensee will also provide a realignment of a section of the Brad B. Freeman Trail (see Appendix D) to eliminate security concerns posed by the current alignment in the vicinity of the Hyatt Powerplant Switchyard. The new alignment, to be designated and constructed to multiple-use standards, will cross the toe of Oroville Dam via an existing gravel access road which climbs to the existing paved dam crest road near the top of the spillway. The dam crest road is used by bicyclists and hikers/walkers to the south, and will be designated multiple-use to the north. Safety signs, directed at both trail users and motorists, will instruct caution and require equestrians to dismount and motorists to slow before and while crossing the spillway bridge. In addition, 1-2 new loop trails at North

and/or South Thermalito Forebay, likely associated with short trail links to access the Thermalito Forebay shoreline, will be provided to enhance Freeman Trail opportunities (precise trail alignments will be determined after future environmental study, to avoid or minimize any potential impacts).

6.5.8 Chaparral Interpretive Trail

Existing Resources: The Chaparral Interpretive Trail can be accessed from the Lake Oroville Visitors Center. A portion (0.2 mile) of the Chaparral Interpretive Trail was made ADA accessible in 2004. Part of the trail is paved and the remainder has been compacted; there is interpretive signage. The Visitors Center has 107 parking spaces, flush restrooms, and trash receptacles (Table 6.5-1).

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.5.9 Dan Beebe Trail

Existing Resources: The Dan Beebe Trail is a 14.3-mile trail that rises from an elevation of 200 to 1,000 feet msl (Table 6.5-1). The trail can be accessed at Saddle Dam TA, Lake Oroville Visitors Center, below the Oroville Dam off of Oro-Dam Boulevard, or from the Lakeland Boulevard TA. Most of the trail is currently closed to bicyclists. Much of the trail winds above the reservoir and provides scenic vistas and an opportunity to access undeveloped areas. The vast majority of the trail is not paved.

Proposed Actions and Enhancements: Trail use designations will be revised (Appendix D) to allow bicycle use of some portions of this trail. The Sycamore Hill trail segment will remain equestrian and hiking use only. The feasibility of a demonstration bike trail near a segment of the Dan Beebe Trail will be investigated; approximately 2 to 4 miles of new trail, as feasible depending upon site topography conditions and private property interests, will be constructed. When and if this new bicycle trail is put into service, the adjacent ("parallel") length of the Beebe trail will be redesignated for equestrian and hiking use only.

6.5.10 Feather Falls Trail

Existing Resources: Feather Falls is located on the Fall River, which flows into the Middle Fork Feather River less than 1 mile from the northeast corner of Lake Oroville. Feather Falls is the nation's sixth highest waterfall at 640 feet. The Feather Falls Trail is located within the Feather Falls Scenic Area in the Plumas National Forest. Virtually all of this trail is located outside the existing Project No. 2100 Boundary. The trailhead, providing restrooms, camping, and parking, is a 35-mile drive from the city of Oroville. The multiple-use trail is 4.5 miles long requiring a round trip of 9 miles for visitors who go to Feather Falls and back.

Proposed Actions and Enhancements: The Feather Falls Trail is adjacent to, but outside of, the Project No. 2100 boundary. This popular regional trail would be included in future interpretive materials prepared for the project area; however, no other changes are proposed by the Licensee at this non-project facility, but DWR will coordinate with the USFS regarding management issues.

6.5.11 Loafer Creek Day Use/Campground Trail

Existing Resources: The Loafer Creek Day Use/Campground Trail is 1.7 miles in length. The first 1.23 miles of the Loafer Creek Day Use/Campground Trail (managed by DPR) meets ADA accessibility requirements (Table 6.5-1). The use designation on this trail is hiking-only. The trail is in a foothill setting and provides a rural experience. The Loafer Creek DUA provides parking for 251 vehicles. There are restrooms and trash receptacles at the DUA, campground, and boat ramp.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

6.5.12 Loafer Creek Loop Trail

Existing Resources: The Loafer Creek Loop Trail is a 3.2-mile trail, limited to horseback riding and hiking. The first 0.23 mile of the Loafer Creek Loop Trail meets ADA accessibility requirements (Table 6.5-1). The trail is in a foothill setting and provides a rural experience. The Loafer Creek DUA provides parking for 251 vehicles; however, many trail users access the trail from the Loafer Creek Campground. There are flush restrooms and trash receptacles at the Loafer Creek DUA.

Proposed Actions and Enhancements: Trail use designations will be revised to allow bicycle use of specific trail segments (Appendix D). To provide bicyclists with access from the Loafer Creek Campground to the Saddle Dam area, where the Bidwell Canyon trail begins, the licensee proposes that all but the westernmost segment of the Loafer Creek Loop Trail be designated multiple-use. The latter segment can be otherwise described as extending from just west and north of the Loafer Creek Equestrian Camp (junction with Roy Rogers Trail), south to the Saddle Dam Trailhead.

6.5.13 Sewim Bo Trail

Existing Resources: The Sewim Bo Trail is a day use multiple-use trail, which receives some equestrian use in the vicinity of the Feather River Nature Center on the opposite side (eastern bank) of the Feather River from the Feather River Fish Hatchery and extending upstream to the Diversion Dam. Much of this trail is located outside the existing Project No. 2100 boundary. The trail was created in conjunction with the Feather River Nature Center as an Interim Project in 2003-2004. The trail leads to a day use area adjacent to the Feather River Nature Center that has been improved with picnic tables, shade ramadas, and interpretive signs, as well as erosion control

measures for the trail itself. One picnic site is ADA accessible with parking and access route.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this trail facility.

6.5.14 Oroville Wildlife Area Trails

Existing Resources: The OWA provides many trails for hiking and bicycle use. The Brad B. Freeman Trail (Section 6.5.7) crosses the OWA, following existing gravel levee-top roads that connect the Afterbay outlet with the OWA Headquarters entrance. The other trails within the OWA are not officially designated and none are ADA accessible. The Feather River runs through the center of the OWA and has several channels. The OWA outside the Afterbay is used as a floodplain for emergency releases from Oroville Dam. There are three main unpaved boat launching sites, one at One Mile Pond, and two along the main roads where people can access the river. Parking is undesignated. There are three vault toilet buildings within the OWA at the primitive camping locations (Table 6.5-1).

Proposed Actions and Enhancements: No changes are proposed to trails in this project management unit.

6.5.15 Potter's Ravine Trail

Existing Resources: The Potter's Ravine Trail is primarily designated for multiple-use and is about 5.5 miles long. It is most readily accessed from the Spillway DUA, located on the north side of Oroville Dam. A segment near to the DUA is for pedestrian use only and is ADA accessible. The Spillway DUA has restrooms and 468 parking spaces (Table 6.5-1).

Proposed Actions and Enhancements: No changes are proposed to trails in this project management unit.

6.5.16 Roy Rogers Trail

Existing Resources: The 4-mile Roy Rogers Trail can be accessed from the Loafer Creek Complex including the campground, equestrian camp, boat ramp, and DUA. The trail is designated for hiking and equestrian use only, and is not ADA accessible. The Loafer Creek DUA provides parking for 251 vehicles; however, many trail users access the trail from the Loafer Creek Campground. There are restrooms and trash receptacles at the DUA, campground and boat ramp (Table 6.5-1).

Proposed Actions and Enhancements: To provide bicyclists with access from the Loafer Creek Campground to the Saddle Dam area, where the Bidwell Canyon trail begins, the licensee proposes that the westernmost segment of the Roy Rogers Trail be designated multiple-use. The latter segment will be otherwise described as extending

from the Loafer Creek Complex's Coyote Campground to the Loafer Creek Boat Ramp, and south to just north of the Loafer Creek Equestrian Camp (junction with the Loafer Creek Loop Trail). A graded dirt access and service road, which runs from near the Loafer Creek Equestrian Camp to near the Saddle Dam Trailhead will be designated as a bicycle trail.

A new single-vault toilet building near the Loafer Creek Complex will be constructed at Brooks Orchard to replace a vandalized portable toilet.

6.5.17 Wyk Island Trail

Existing Resources: The Wyk Island Trail can be accessed from the Bidwell Canyon BR parking. The 0.19 mile of trail meets ADA accessibility requirements (Table 6.5-1). The use designation on this trail is hiking-only. The trail is in a foothill setting and provides a rural experience. There are 279 vehicle/trailer parking spaces, restrooms, and trash receptacles at the Bidwell Canyon BR.

Proposed Actions and Enhancements: Apart from periodic updates of the interpretive materials, no changes are proposed at this facility.

7.0 RECREATION IMPLEMENTATION PROGRAMS

This section describes the draft RMP's six implementation programs:

1. Recreation Facility Development Program;
2. Recreation Operations and Maintenance (O&M) Program;
3. Recreation Monitoring Program;
4. Resource Integration and Coordination Program;
5. Plan Review and Revision Program; and
6. Interpretation and Education (I&E) Program.

The six draft RMP programs specifically detail how DWR will meet the RMP's goals and objectives and implement the proposed PME measures defined in Appendices A, C and D over the term of the new license. These programs are described in more detail below.

7.1 RECREATION FACILITY DEVELOPMENT PROGRAM

The Recreation Facility Development Program, along with the other draft RMP programs, is intended to help meet existing and future recreation facility needs identified in the project area over the term of the new license. This program focuses on upgrading existing recreation facilities and constructing new recreation facilities, when appropriate, based on documented needs and associated monitoring results. This program defines the construction-related responsibilities of DWR, identifies proposed recreation development projects and their estimated costs (Appendix A), provides conceptual site diagrams of the locations of anticipated recreation facility improvements (Appendix C) and trail improvements (Appendix D), and defines facility development standards and design criteria. This first program includes seven elements, as presented below.

7.1.1 Recreation Facility Development and Upgrades

Proposed recreation facility development action and enhancement measures have been identified to help satisfy both existing and future project-related recreation needs. This program element includes new, renovated, expanded, and relocated public recreation facilities that are expected to be implemented through the term of the new license by DWR. Appendix A summarizes the proposed recreation facility development measures in the project area.

7.1.2 Recreation Development Locations

The locations and potential layout of proposed recreation facility or use area improvements are provided in Appendix C. Refer to the conceptual site plans in Appendix C for further design details. Appendix D describes new trail enhancements. More detailed designs and construction documents will be completed at a later date following license issuance by FERC and acceptance by the licensee, and finalization of this draft RMP following license issuance.

7.1.3 Recreation Facility Design Guidelines and Approvals

When implementing the proposed recreation measures in Appendix A, DWR will use appropriate facility siting and design criteria and other construction standards as necessary to:

- Comply with State and local public health and safety codes and regulations;
- Provide design continuity and consistency with the character of the area and desired experience level where the site is located;
- Provide a high quality visitor experience and/or enhance visitor convenience;
- Minimize facility and site deterioration and operations and maintenance costs;
- Protect and/or mitigate natural and cultural resources;
- Comply with DPR-adopted plans and policies when appropriate (General Plan, Resource Management Directives, etc.);
- Comply with ADAAG, as amended over time; and
- Provide consistency with FERC license order terms and conditions and project operations.

Recreation facilities constructed within DPR-managed lands will be designed and constructed to meet DPR recreation facility construction standards (as amended over time) and other appropriate design guidelines, for the appropriate recreation opportunity type. DPR will approve all design and construction plans on DPR-managed lands. DWR will consult with DPR, DBW, and/or DFG on facility design on lands outside the LOSRA within DWR jurisdiction with the intent of providing a consistent design of facilities within the same general recreation area.

Signs, kiosks, or other facilities constructed within State or County highway rights-of-way (ROW) will be coordinated with and approved by the California Department of Transportation (Caltrans) and/or Butte County Public Works, as appropriate.

7.1.4 Americans with Disabilities Act (ADA) Compliance and Facility Upgrades

Campground and day use facilities, when significantly modified or constructed as new, will conform with Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG, as amended) that are formally adopted at the time of construction or modification. Several proposed ADA-related improvements have been identified and are listed in Appendix A. ADA-related enhancements are a high priority and most will be scheduled in the first 10 years after license issuance (phase L1).

7.1.5 NEPA/CEQA Compliance and Environmental Project Review and Permitting

Proposed recreation measures in the project area will involve the need for the issuance of various federal, State, and local permits, licenses, authorizations, and other certifications. When designing new or modified facilities or making decisions that may have an impact on the natural and cultural environment, DWR will conduct appropriate environmental reviews under appropriate regulations. This will include compliance with

the California Environmental Quality Act (CEQA). DWR will apply for and receive all necessary permits and approvals prior to construction. DWR will be responsible for all studies, plans, or payment of fees associated with obtaining all necessary permits and approvals for recreation facility construction-related projects related to DWR's constructions projects in the draft RMP. Appropriate projects may be compiled together for environmental review and approval for efficiency and cumulative effects analysis purposes.

On federally-managed lands, recreation project approvals related to facility design, public review, National Environmental Policy Act (NEPA), and National Historic Preservation Act Section 106 compliance processing will be coordinated with both DPR and the managing federal land and resource management agency. DWR will work closely with DPR and other agencies as needed to facilitate timely project reviews and approvals. DPR will approve all final plans and authorizations on DPR-managed lands.

7.1.6 Agency and Public Review of Planned Recreation Development

DWR will hold review meetings with its agency partners periodically each year as described in Section 4.4 (ORCA forum).

In addition to these periodic ORCA review meetings, every 2 years DWR will prepare biennial reports on project area recreation capacity and monitoring results and planned and completed recreation facility development. These biennial reports, when finalized, will be filed with FERC for informational purposes. DWR will also prepare and file a required FERC Form 80 Licensed Hydropower Development Recreation Report, as amended) every 6 years. These reports will be publicly available through the LCU and/or FERC. Approximately every 12 years, the draft RMP may be updated and revised and may modify planned recreation facility development projects based on monitoring results and changes over time. Periodic ORCA review meetings would also be used to help update the RMP or to make minor revisions as needed over time.

7.1.7 Facility Construction Coordination, Scheduling, and Phasing

For DWR-responsible construction projects per Appendix A, DWR will be responsible for preparing or acquiring all required plans, studies, and permits prior to construction. For DWR cost-share projects, as identified in Appendix A, the primary responsible agency or cooperating agency will be responsible for preparing or acquiring all required plans, studies, and permits prior to construction. If cost-share, partnership funding, or grant application funding sources are delayed for any reason, the associated recreation development may also be delayed until such time that appropriate cost-share funding may be secured by all parties.

Specific facility details and conceptual site layouts for each of DWR's public recreation facilities, sites, and trails in the project area are provided in Appendices A, C, and D. These exhibits indicate phasing and whether the site is existing and to be improved, or

is a new undeveloped site or trail. Proposed construction projects at each site are defined as existing needs to be completed in the first 10 years after issuance of the new license (assumed to be 2007 – 2016 for planning purposes); future needs to be completed in subsequent decades will be based on ongoing monitoring results and demonstrated needs (2017 – 2056; subject to FERC's decision regarding license term). Appendix A includes estimates of future costs that include both undefined facility expansion (phases L2 to L5) and periodic capital replacement of existing facilities (phases L1 to L5).

The five recreation facility development phases proposed in this draft RMP include:

- L1 (2007 – 2016)—Meet highest priority needs first, including initial action items, that address most existing ADA, ecological, and safety concerns; as well as immediate recreation site capacity needs, new facilities to improve the distribution of shoreline access sites around the reservoirs, and settlement-related actions;

- L2 (2017 – 2026)—Meet some remaining high priority needs plus some future needs through expansion of existing sites or construction of new recreation facilities, based on capacity threshold monitoring;

- L3 (2027 – 2036)—Meet remaining longer-term future needs through new recreation site development based on capacity threshold monitoring;

- L4 (2037 – 2046)—Meet remaining longer-term future needs through new recreation site development based on capacity threshold monitoring; and

- L5 (2047 – 2056)—Meet remaining longer-term future needs through new recreation site development based on capacity threshold monitoring.

The highest priority actions (L1) are aimed first at addressing most existing needs such as public health and safety concerns, resource protection needs, and ADA accessibility compliance that have been identified during the planning process and during RSWG collaboration. Some increased site capacity at already-constrained recreation sites will also be addressed. Priority needs are listed by site in Appendix A.

Appendices A and B of this draft RMP identify facility construction phasing for proposed DWR-responsible measures at existing and new recreation facilities and sites in the project area and vicinity. Agencies managing adjacent lands (such as DFG and FRRPD) and private entities (such as concessionaires) may also modify or expand their recreation facilities over time to help meet future demand in the project area and vicinity; however, these other non-DWR construction projects located outside of the Project No. 2100 boundary are not considered part of the project.

7.2 RECREATION OPERATIONS AND MAINTENANCE PROGRAM

Ongoing and adequate operations and maintenance (O&M) of existing and future recreation facilities is critical to visitor enjoyment and effective recreation resource management. For most sites within the Project No. 2100 boundary, DWR expects to allocate most day-to-day recreation facility management responsibility to DPR under the terms of a new Memorandum of Agreement (MOA). DPR's authority will be consistent with its responsibilities described in the California Public Resources Code and will include authority to manage all aspects of recreation facility operation and public use, as well as select and manage contracted concessionaires. This includes all necessary personnel, equipment, materials, and management for day-to-day recreation operations and natural resource management within the LOSRA boundary.

Existing and future recreation facilities either owned or operated by entities other than DWR (such as DFG and FRRPD) will continue to be operated and maintained by their current providers unless specified in Appendix A. The draft RMP does not address O&M of facilities outside the Project No. 2100 boundary.

DWR intends to also arrange for provision of O&M services at recreation sites in the project area currently serviced by DWR. Potential arrangements are under review at this time; any new proposed agreement will be included in Appendix E, when available.

7.2.1 Operations and Maintenance Standards and Practices

In the draft RMP, ongoing O&M of recreation facilities will be provided that is appropriate to the level of development, density of visitor use, resource protection needs, and recreation activity. In general, DPR will be responsible for maintaining LOSRA grounds and facilities to the present level of established standards. DWR will periodically review and approve O&M standards to be used prior to signing new concessionaire agreements or the issuance of any new permit or lease agreement.

For DWR-responsible sites, DWR will oversee the adequacy of ongoing O&M activities at each site in a number of ways including:

- DWR permits or leases will be periodically reviewed for adequacy of the O&M provisions;
- DWR will adequately enforce permit or lease O&M provisions once enacted; and
- DWR will provide ongoing coordination with DPR or direction to its concessionaire or others as appropriate.

Based on these activities, DWR will specify remedial actions as necessary.

7.2.2 Public Shoreline Access

As part of the Recreation O&M Program, reasonably available and safe public access to project shorelines and waters will be provided by all shoreline recreation providers in the project area. This access will be accommodated through adequate maintenance of parking areas and roads, fishing access sites, signs, trails and trailheads, swimming areas, and boating access sites.

In general, the public will have reasonable access to the project shoreline between the 900 and 650 feet msl elevations of Lake Oroville. Several modified public access sites proposed in the draft RMP will increase public shoreline access during the term of the new license in several project areas. Improved shoreline access is a focus at both developed and undeveloped shoreline areas of Lake Oroville. These sites and trails are described in Appendices A, C, and D.

Within the Project No. 2100 boundary, DWR will conduct periodic monitoring of dispersed undeveloped shoreline recreation sites per the Recreation Monitoring Program (Section 7.3). If monitoring reveals significant site resource impacts and O&M needs from excessive visitor use, new O&M and potential “hardening” of these sites will be considered as appropriate. Some dispersed sites may be selected for closure. These types of decisions would occur following periodic public review meetings.

7.2.3 Public Safety and Law Enforcement

As part of the O&M Program, DWR is committed to working with DPR, DFG, CHP, and the Butte County Sheriff’s Office in providing for adequate public safety on project lands and waters. In addition to other O&M actions aimed at increasing public safety at recreation facilities on land, on-water safety is also of particular importance. DWR will work with DPR to make an effort to identify and mark any significant known submerged hazards on project reservoirs.

7.2.4 Recreation Fees

As allowed by the FERC, DPR will continue to charge appropriate recreation user fees at DPR-managed recreation sites within the project boundary to partially offset ongoing O&M costs and new facility upgrade costs at these sites. Fees will be reviewed and assessed by DPR in a manner consistent with its establishment of day use and camping fees at other, comparable units of the State Park System. New fees may also be collected by DWR to help offset the cost of funding boat- and land-based patrols at the Thermalito Afterbay, including the improved Afterbay outlet camping areas and DUAs. DFG will also periodically review the classification of the Oroville Wildlife Area in the context of fees it charges at similar sites Statewide, and may implement reasonable and appropriate user fees in the future.

7.3 RECREATION MONITORING PROGRAM

The Recreation Monitoring Program defines DWR's recreation-related monitoring activities in the project area over the term of the new license. In some cases, new facility development may be contingent upon reaching monitoring capacity threshold levels before new construction is commenced. The monitoring of recreational use levels, impacts, and activities is an integral component of an adaptive management strategy and is necessary in determining when management changes (including new recreation facilities) are needed. Future details of the Recreation Monitoring Program will be included in Appendix F. Currently, only the locations of existing mechanical traffic counters and a FERC Form 80 are included in Appendix F.

The Recreation Monitoring Program defines a number of actions including:

- Description of existing and future monitoring resources;
- Description of monitoring standards and indicators;
- Monitoring and reporting schedule;
- Annual and periodic monitoring activities;
- Annual and periodic analysis of monitoring data;
- Periodic reporting requirements; and
- Decision-making related to new facility construction on a biennial basis.

The three primary components of the Recreation Monitoring Program include:

- Recreation Monitoring Area Framework—Use of management units as a monitoring framework for assessing conditions in more discrete geographical areas rather than just at a reservoir-wide or project-wide level;

- Recreation Monitoring Indicators and Standards Framework—Use of monitoring indicators and standards specific to each of the management units and at selected sites; and

- Recreation Monitoring Program Components—Program components such as methods and tools, monitoring frequency, reporting requirements, and decision-making logistics.

7.3.1 Recreation Monitoring Area Framework

For purposes of long-term recreation monitoring, the project area has been divided into several management units (Section 5.0 and Figure 5.0-1). Periodic data collection and analysis at the management unit level will allow for decision-making on a unit-by-unit basis and, when compiled, at a reservoir-wide and a project-wide basis. These management units include:

- Lake Oroville (land area);
- Lake Oroville (reservoir surface water area with six sub-unit divisions);
- Diversion Pool (includes Feather River Fish Hatchery);
- Thermalito Forebay;
- Thermalito Afterbay; and
- Oroville Wildlife Area.

7.3.2 Recreation Monitoring Indicators and Standards Framework

The monitoring framework is based on indicators and standards related primarily to capacity utilization. As existing facilities approach their physical, spatial, ecological, or social capacity, a range of solutions will be considered that may include new facility construction.

The monitoring approach also includes defining the desired type of visitor experience to be provided in each area and to monitor conditions over time to assess whether acceptable conditions are being maintained to preserve or enhance the desired condition ("visitor satisfaction"). Two key elements in the monitoring process are indicators and standards that help define the desired experience and provide a framework for monitoring changing conditions over time. Monitoring indicators identify the key issues or variables to monitor over time and are specific measurable variables used to define the desired experience. Monitoring standards define criteria for acceptability and help define the minimum acceptable condition for each indicator. These standards are also called "triggers" in that once these triggers are reached and a sustained trend is identified, further actions are warranted that may include new construction or a range of lesser actions. Section 7.3.3.1 describes the frequency of monitoring activities.

Key considerations related to monitoring indicators and standards are described below.

Monitoring Indicators

- Reflect important key issues that should be monitored;
- Indicate specific variables that realistically describe project area field conditions;
- Allow definition of desired conditions and assess effectiveness of management practices;
- Should be measurable and responsive to possible management actions; and
- Should be easily and economically measurable.

Monitoring Standards (also called Triggers)

- Should be refined based on field considerations, prior to full implementation;
- May use a qualitative, judgment-based process;
- Should not be idealistic goals, but real conditions that can be achieved over time;

- May be a statement of conditions that are desired or may be the status quo that would be continued; and
- May be expressed in terms of probabilities (allows for some variability).

Table 7.3-1 lists the monitoring indicators for recreation use levels for developed recreation facilities and dispersed undeveloped sites in the project area. Monitoring standards or triggers for each key indicator are also shown in Table 7.3-1 and vary by type of setting, resource experience, and developed and undeveloped recreation facilities. Resource setting characteristics vary by area and include the visual character of the area, the number and distribution of man-made structures, and the type of access provided. Managerial setting characteristics also vary by area and include the design characteristics of recreation facilities and their maintenance, design characteristics of roadways and their maintenance, and whether motorized use is allowed or not. Social setting characteristics also vary by area and include the degree of interaction with other users, the evidence of human use and concentration of use, and the types of activities provided.

Additionally, Table 7.3-1 describes the goals of tracking each indicator, how each indicator will be measured, the frequency of measurement for each indicator, and lists potential management actions for each indicator. The management actions provided represent a continuum of management actions, ranging from minor, less management-intensive actions to major, more management-intensive actions. Decisions regarding future management actions would be made at the time that standards for each indicator are approached and then exceeded, based on field conditions.

In all cases, the entire suite of indicators should be reviewed and examined before management actions are taken. Decisions should not be made based on one indicator alone.

Table 7.3-2 lists the locations where monitoring activities will periodically occur. Data to be collected to monitor and analyze each indicator will be derived from a combination of periodic field observations, paid fee receipt analysis, and analysis of vehicle counter data (annually, seasonally, monthly, weekly or daily). During the first 3-year period of draft RMP implementation, following issuance of a new license, the Recreation Monitoring Program will be refined and tested. Adjustments may be made as necessary to improve the efficiency, performance, or end results of the program. All potential changes to the program will be coordinated through the LCU.

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Table 7.3-1. Recreation monitoring indicators and standards (triggers).

Key Indicators	Goals	Standards/Triggers	Methods of Measurement	Frequency	Potential Management Actions to Consider
Visitor Perceptions, including Satisfaction, Crowding, and User Conflicts	• Changes in social and qualitative values. • Changes in visitor perceptions and preferences. • Changes in visitor satisfaction and overall quality of user experience. • User conflicts. • Changes in user activity patterns.	• Consensus of visitors is that they are satisfied with their visit (per periodic DPR surveys) – maintain or improve the visitor satisfaction rating defined in relicensing study results. Track trends in visitor satisfaction and suggestions for improvement in services and facilities by facility. • Episodes of increasing crime and vandalism.	• Collect Project-wide user/activity counts using random sampling techniques consistent with social science survey protocols (see frequency below). • Track by site, management unit, and project-wide. • Periodically track incidents of crime and vandalism through law enforcement reports and input from site maintenance crews; analyze trends. • Periodically track public comments received by DPR and the Oroville Chamber of Commerce; analyze trends.	• Periodic targeted survey efforts will used, if needed, to help resolve site/area-specific issues. These may be done annually if needed to help determine trends, help provide management with further visitor information to make informed decisions. DWR will coordinate with DPR regarding customer (including concessionaire) survey efforts. • Baseline visitor activity counts done project-wide every other FERC Form 80 filing (12 years), in addition to counts done daily and reported monthly / annually / biennially (via road counters and paid fee receipts). • Biennially report incidents of crime and vandalism by area/site and related trends. • Biennially report public comments received by DPR and the Oroville Chamber of Commerce and related trends.	• Expand existing facilities • Provide additional visitor management and/or enforcement • Provide adequate buffers between uses • Site closures • Change visitor services • Increase visitor education (I&E)
Developed Boat Ramp Facility and Use Levels (including Low Pool)	• Boat ramp parking occupancy and use during the recreation season (both weekday and weekends; used to trigger additional parking).	• For all occupancy triggers, must show a sustained trend of 3 out of 5 consecutive threshold-exceedence years (with consideration for dry water years, wildfires, closures, etc). • Weekday developed boat ramp and/or related parking occupancy average of 60% during the main recreation season (May 15 to Sept. 15) at each individual boat ramp. • Weekend/holiday developed boat ramp and/or related parking occupancy average of 80% during the main recreation season (May 15-Sept. 15) at each individual boat ramp. • On-water boating density on Lake Oroville of 25 acres/active boat, assessed reservoir-wide. Lower boating density on other project water bodies (will vary).	• Estimate the number of parked vehicles by conducting on-site observations using random sampling techniques consistent with social science survey protocols (see frequency below). • Conduct periodic on-water boat counts by sub-units during larger baseline surveys using random sampling techniques consistent with social science survey protocols (see frequency below). • Days when fishing tournaments occur and days when boat ramp lanes are temporarily blocked for operational or maintenance reasons are excluded from the analysis. • Review feedback from fishing tournament operators to help minimize delays and access problems.	• Manual parked vehicle count data will be collected using a statistically representative random sampling technique consistent with social science survey protocols to represent use levels during recreation season weekdays, weekends, and holidays. Annual results will be reported biennially for all boat ramp parking areas. If parking use levels at a site are not approaching capacity, on-site parking counts will only be conducted every few years or as needed. Larger baseline on-water boat counts and visitor surveys will be conducted Project-wide every other FERC Form 80 filing (12 years; sooner if there is a site-specific need). • Statistically representative random sampling techniques consistent with social science survey protocols for data collection will be conducted annually if and when a site hits 50% weekday or 70% weekend average (approaching) parking capacity utilization. • Biennial reporting of data collected annually (DWR use reports), every 6 yrs. (FERC Form 80 by DWR), and every 12 yrs. (larger baseline activity counts).	• Expand existing facilities (more mooring buoys, parking stalls, or ramp lanes) • Increase site efficiency (more docks or staff to direct boaters) • Provide additional visitor management and/or enforcement • Change visitor services or increase O&M • Increase visitor education (I&E)

Table 7.3-1. Recreation monitoring indicators and standards (triggers).

Key Indicators	Goals	Standards/Triggers	Methods of Measurement	Frequency	Potential Management Actions to Consider
Developed Campground Capacity Utilization	• Campground capacity (individual sites and group sites) and use during the recreation season (both weekday and weekends). • Trends in use levels.	• For occupancy triggers, must show a sustained trend of 3 out of 5 threshold-exceedence years (with consideration for dry water years, wildfires, closures, etc.). • Weekday campground site occupancy average of 60% during the recreation season (Memorial Day to Labor Day) at any individual campground (individual sites and group sites). • Weekend/holiday campground site occupancy average of 80% during the recreation season (Memorial Day to Labor Day) at any individual campground (individual sites and group sites).	• Review paid fee receipts at campgrounds and relate to campground capacity.	• Paid fee receipts will be collected daily, and reported monthly. • Larger baseline activity counts will be conducted every other FERC Form 80 filing (12 years). • Annual assessments will be conducted when site capacity utilization hits 50% weekday or 70% weekend (approaching) capacity. • Monitor annually to assess campground capacity. • Biennial reporting of data collected daily/monthly/annually (DWR use reports), every 6 yrs. (FERC Form 80 by DWR), and every 12 yrs. (larger baseline activity counts).	• Expand existing facilities (more campsites – individual or group) • Add campground amenities • Direct visitors to other available sites • Offer incentives to redistribute use (to other sites or shoulder seasons) • Provide additional visitor education (I&E)
Developed Day Use Area Capacity Utilization	• Developed day use area/site capacity and use during the recreation season (both weekend and weekends). • Trends in use levels.	• For occupancy triggers, must show a sustained trend of 3 out of 5 threshold-exceedence years (with consideration for dry water years, wildfires, closures, etc.). • Weekday developed day use area parking occupancy average of 60% during the recreation season (May 15 to Sept. 15) at any individual facility. • Weekend/holiday developed day use area parking occupancy average of 80% during the recreation season (May 15 to Sept. 15) at any individual facility.	• Conduct larger baseline day use activity counts using random sampling techniques consistent with social science survey protocols (see frequency below). • Collect road counter data at developed day use areas. • Increased assessment of specific developed day use areas will be conducted using random sampling techniques consistent with social science survey protocols (see frequency below) when 50% weekday or 70% weekend (approaching) site capacity utilization average is hit at any individual day use area.	• Road counter data will be collected daily and reported biennially. • Larger baseline activity counts will be done every other FERC Form 80 filing (12 years). • Assess site parking capacity annually. • Biennial reporting of data collected daily/monthly/annually (DWR use reports); every 6 yrs. (FERC Form 80 by DWR); and every 12 yrs. (larger baseline activity counts).	• Expand existing facilities (parking, picnics sites, beach area, etc.) • Redistribute use by providing visitors with information about alternative sites • Increase visitor management and/or enforcement • Add new site amenities • Provide additional visitor education (I&E)

Table 7.3-1. Recreation monitoring indicators and standards (triggers).

Key Indicators	Goals	Standards/Triggers	Methods of Measurement	Frequency	Potential Management Actions to Consider
Developed Trail Facility Capacity and Trail Use	• Trailhead capacity and use during the recreation season (2 months in the spring and in the fall, both weekday and weekends, exact end dates to be determined). • Trends in use levels. • Parking capacity at trailheads to be defined allowing for adequate circulation of vehicles with horse trailers.	• For occupancy triggers, must show a sustained trend for 3 out of 5 threshold-exceedence years. • Weekday trailhead parking occupancy average of 60% during the primary trail use recreation season (parking capacity at each trailhead to allow for adequate circulation of horse trailers). • Weekend/holiday trailhead occupancy average of 80% during the primary trail use recreation seasons (parking capacity at each trailhead to allow for adequate circulation of horse trailers). • Increased monitoring when a trailhead hits 50% weekday or 70% weekend occupancy average for the season at any individual site (parking capacity at each trailhead to allow for adequate circulation of horse trailers).	• Conduct larger trail activity counts using random sampling techniques consistent with social science survey protocols (see frequency below). • Collect periodic roving use counts at trailheads using random sampling techniques consistent with social science survey protocols (see frequency below). • Increase monitoring at trailheads and selected trail segments using random sampling techniques consistent with social science survey protocols (see frequency below) when 50% weekday or 70% weekend (approaching) site capacity utilization average is hit at any individual trailhead.	• Roving use counts at trailheads conducted every 10 years, using random sampling techniques with a sufficient number of sampling dates to estimate peak season use consistent with social science survey protocols. • Other trail use activity counts done every other FERC Form 80 filing (2 years). • Annual data collection (roving use counts, as above) conducted when a site hits 50% weekday or 70% weekend (approaching) capacity utilization average. • Assess capacity biennially. • Report findings biennially within DWR's other biennial report.	• Expand existing trailheads (parking) • Provide additional visitor management and/or enforcement • Increase resource protection measures • Provide additional trail user education (I&E) • Communicate trail use designation changes • Implement trail design changes
Undeveloped Dispersed Site Creep, Pioneering, and Occupancy	• Use and resource impacts associated with undeveloped dispersed recreation sites, primarily in the OWA. • Sites and use areas that are inconsistent with existing or future OWA management plans would be modified or closed. • Responses to management actions over time.	• Camping allowed in designated areas only. Other areas to exclude camping. • 70% seasonal capacity utilization average during the recreation season (Memorial Day to Labor Day).	• Identify and track sites over time. • Document the baseline conditions of significant sites of concern including size, impacts, and proximity to sensitive areas. • Conduct selected site observations, assessments and counts during the recreation season, using random sampling techniques consistent with social science survey protocols (see frequency below).	• Monitor site occupancy of representative or target sites every 10 years.	• Erect barriers to better define site/road boundaries • Provide additional enforcement • Provide increased visitor education (I&E) • Harden some sites • Close some sites (temporarily or permanently) • Increase cleanup activities (O&M)

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Table 7.3-2. Monitoring locations by management unit and monitoring area in the Oroville Facilities project area.

Management Unit	Monitoring Area	Selected Monitoring Sites/Areas
Lake Oroville (Land)	Lime Saddle	• Lime Saddle Campground • Lime Saddle Group Campground • Lime Saddle BR/DUA/Marina*
	Spillway	• Spillway BR* • Spillway DUA*
	Bidwell Canyon	• Bidwell Canyon BR/DUA* • Bidwell Canyon Campground* • Bidwell Canyon Marina*
	Loafer Creek	• Loafer Creek Campground* • Loafer Creek Group Campground* • Loafer Creek Equestrian Campground* • Loafer Creek DUA* • Loafer Creek BR*
	Car-top Boat Ramps	• Dark Canyon Car-top Boat Ramp* • Nelson Bar Car-top Boat Ramp* • Vinton Gulch Car-top Boat Ramp* • Foreman Creek Car-top Boat Ramp* • Stringtown Car-top Boat Ramp*
	Other Sites	• Enterprise Boat Ramp* • Saddle Dam Trailhead Access • Lake Oroville Visitors Center* • Oroville Dam Overlook DUA* • Boat-in Campgrounds • Floating Campsites
Lake Oroville (Water)	Main Basin Sub-unit	• Main Basin and associated coves at Spillway, Potters Ravine, Canyon Creek, Loafer Creek, and Bidwell Canyon
	Middle Fork Sub-unit	• All water areas on Middle Fork arm (upstream of Bidwell Bar bridge)
	South Fork Sub-unit	• All water areas on South Fork arm (upstream of confluence with Middle Fork arm)
	Lower North Fork Sub-unit	• All water areas on North Fork arm between Main Basin and confluence with West Branch
	Upper North Fork Sub-unit	• All water areas on North Fork arm upstream of confluence with West Branch
	West Branch Sub-unit	• All water areas on West Branch (upstream of confluence with North Fork)
Diversion Pool	–	• Lakeland Boulevard Trailhead Access
		• Diversion Pool DUA* (add new DUA also) • Feather River Fish Hatchery DUA*
Thermalito Forebay	–	• North Thermalito Forebay BR/DUA and Aquatic Center*
		• South Thermalito Forebay BR/DUA*

Table 7.3-2. Monitoring locations by management unit and monitoring area in the Oroville Facilities project area.

Management Unit	Monitoring Area	Selected Monitoring Sites/Areas
Thermalito Afterbay	–	• Wilbur Road BR*
		• Monument Hill BR/DUA*
		• Larkin Road Car-top Boat Ramp*
OWA	–	• Afterbay outlet* • Five additional OWA entrances providing access to dispersed use sites*

Note: DWR maintains traffic counters to monitor use levels at 24 locations (Appendix F), which provide use data for the listed monitoring sites followed by an asterisk (*). Single counters provide aggregate monitoring data for several associated sites at the Lime Saddle, Spillway, Bidwell Canyon, and Loafer Creek complexes at Lake Oroville. Counters are also installed at the Feather River Fish Hatchery DUA, the only developed recreation site on the low-flow channel of the Feather River within the project boundary and upstream of the OWA.

Appendix F lists the locations of existing recreation site or area traffic counters to be used in the Recreation Monitoring Program. If needed, additional traffic counters will be added, relocated, or removed by DWR.

7.3.3 Recreation Monitoring Components

The Recreation Monitoring Program defines the recreation-related monitoring needs of the project area over the term of the new license. In many cases, new facility development is contingent upon reaching monitoring capacity threshold levels and establishing trends (3 threshold years out of 5 consecutive years, with consideration for wildfires, site closures, etc.) before new construction may proceed. Therefore, the Recreation Monitoring Program is integral to the overall draft RMP program over the license term.

Recreation Monitoring Program components to be implemented by DWR include:

- Frequency of monitoring activities;
- Monitoring management actions;
- Reporting requirements; and
- Decision-making related to new facility construction.

Each of these components is described in more detail below.

7.3.3.1 Frequency of Monitoring Activities

The Recreation Monitoring Program includes two levels of monitoring:

1. Ongoing regular monitoring of recreation sites and use areas using readily-available monitoring data collected during normal routine management of

recreation facilities, such as paid fee receipts, traffic counts, observations made by patrol staff, public comments, etc.; and

2. More in-depth recreation activity counts conducted every 12 years, and periodic visitor surveys by DPR at selected recreation sites as needed.

Table 7.3-1 also outlines the proposed monitoring schedule of each key indicator.

7.3.3.2 Monitoring Management Actions

Based on the available data gathered during yearly and periodic monitoring, potential management actions for each management unit should be considered by DWR. Management options are listed in Table 7.3-1 and may also include:

- Plan, design, expand, renovate, and/or construct facilities in one or more phases;
- Increase monitoring efforts as needed, such as collecting more detailed visitor counts at facilities in question;
- Begin planning and designing new facilities or renovation;
- Pursue or wait on new construction;
- Modify monitoring indicators if conditions warrant; and
- Increase visitor information in order to redistribute use patterns.

Other management actions may also be considered as appropriate in consultation with other recreation providers in the project area.

7.3.3.3 Reporting Requirements

Periodic assessment reports will be prepared by DWR for each management unit (per FERC Form 80 [Appendix F] reporting requirements) and will document:

- Data collection and statistical methods applied in analyzing monitoring data;
- Success of developed recreation visitor management efforts;
- Recreation facility use levels and counts;
- Trends in recreation facility use; and
- Projected needs based on monitoring indicators and standards.

The FERC Form 80 reporting process, as amended (required by FERC every 6 years from licensees) also will be used as an opportunity to analyze and report on visitor trends, whether monitoring thresholds have been exceeded, success of visitor control measures, decisions reached based on monitoring results, and plans for the next monitoring timeframe.

Detailed monitoring and reporting requirements will be developed and funded by DWR for project-related facilities and sites and their operation and maintenance.

Standardized monitoring and reporting forms will include FERC Form 80 forms (Appendix F), as amended, as well as additional ones such as facility condition inspection forms and recreation site use count forms.

Monitoring personnel will be qualified, either through education or experience, and/or will be adequately trained on how to conduct the monitoring effort and complete the forms in a consistent manner. DWR staff, contractors, and/or concessionaires may be used for this purpose. These forms will be compiled and analyzed annually by site, management unit, and reservoir area.

7.3.3.4 Decision-Making Related to New Facility Construction

DWR will hold periodic interagency recreation planning and coordination sessions during periodic ORCA meetings (Section 4.4) that will be held each year. At these ORCA meetings, it is expected that recreation resource management data and approaches (actions) for the project area will be discussed. Proposed recreation actions and enhancements and their phasing (as listed in Appendix A) will be assessed at these periodic meetings.

Management actions to consider include:

- Plan, design, expand, renovate, and/or construct facilities in one or more phases;
- Modify monitoring efforts as needed, such as using volunteers to collect more detailed visitor counts at selected sites in question;
- Begin planning and designing new facilities or renovation;
- Pursue or wait on new construction;
- Modify monitoring indicators if conditions warrant;
- Increase visitor information about less crowded facilities and use areas in the project area;
- Consider a full or partial reservation system; and
- Collectively participate in grant applications.

Other management actions may also be considered as appropriate.

7.4 RESOURCE INTEGRATION AND COORDINATION PROGRAM

The Resource Integration and Coordination Program is a formalized process whereby DWR would make coordinated, timely, and informed decisions related to implementation of the draft RMP and other project-related resource management plans. Because of simultaneous activities occurring by various resource groups and by other resource agencies, both formal and informal communication are necessary over the term of the new license. An important goal of this communication is to achieve a balanced integration of sometimes competing and sometimes complementary resource

goals for project lands and waters. This goal may be achieved when interests and concerns have been adequately addressed or met to the fullest extent possible.

The Resource Integration and Coordination Program includes the following five elements to be implemented by DWR:

- DWR will conduct periodic ORCA coordination meetings (at least two to four times annually) among appropriate agencies over the term of the new license (Section 4.4). Adequate DWR staff time and resources will be provided to accomplish this task. Summaries of ORCA coordination meeting action decisions will be publicly available through the LCU.

- DWR will provide relevant information used to make resource decisions, including non-sensitive geographic information system (GIS) and other data, on-the-ground knowledge, and monitoring data. It is proposed that this information will be available through the LCU.

- DWR will help clarify resource goals, objectives, and priorities per the new License Order Terms and Conditions (Appendix G) as necessary.

- DWR will help coordinate and conduct, as necessary, studies or consultation that help solve particular problems or resolve specific issues.

- DWR will endeavor to address stakeholder disputes through the LCU (described below).

7.4.1 Dispute Resolution

Disputes associated with the FERC license will be brought to the attention of DWR's LCU. The LCU will investigate and evaluate disputes and recommend a course of action to resolve each dispute. The licensee will be the final arbitrator of license proposals and compliance disputes and, as such, will accept or deny proposed projects or expenditures as appropriate. Stakeholders retain the option of taking unresolved disputes to FERC as is currently allowed.

7.5 PLAN REVIEW AND REVISION PROGRAM

Recreation and resource conditions can be expected to change over time. It is likely that unforeseen recreation needs, changes in visitor preferences and attitudes, new recreation technologies, or other factors will arise over the course of the new license term. As a result, the draft RMP may be updated and/or revised. Revision of the draft RMP will require that changes be fully documented.

The frequency with which the draft RMP is revised or updated will depend on significant changes to existing conditions, monitoring results, and management responses made over time. DWR will determine the frequency of RMP updates in consultation with other ORCA members, but not more often than once every 12 years (two FERC Form 80 [Appendix F] cycles). However, the following guidelines should be considered over time for efficiency and continuity purposes:

- RMP Sections 1 through 6 should be updated approximately every 12 years (two FERC Form 80 cycles) as conditions change.
- Proposed PME measures, estimated costs, and recreation site conceptual plans (Appendices A, B, C, and D) should be updated every 12 years if needed.
- Monitoring information should be updated every 6 years (just ahead of one FERC Form 80 cycle) based on success of monitoring indicators and standards and then reviewed every 12 years thereafter, based on ongoing monitoring results.
- Baseline recreation information (Appendix I) should also be updated based on information from studies conducted approximately every 12 years.

Table 7.5-1 outlines the draft RMP revision schedule.

Table 7.5-1. RMP revision schedule.

RMP Components	Frequency of Potential Revisions		
	Annually	**6 Years**	**12 Years**
RMP Sections 1 through 8	If needed by DWR		X
FERC Form 80, as amended		X	
Proposed PME measures, estimated costs, and recreation site conceptual plans (Appendices A to D if needed)	If needed by DWR		X
Baseline recreation information (Appendix I), whenever new report data are developed	X	X	X

Source: Developed by EDAW 2004

7.6 INTERPRETATION AND EDUCATION PROGRAM

The Interpretation and Education (I&E) Program serves several purposes, including providing enhanced experiences for residents and visitors, encouraging participation in resource protection measures by area visitors, and promoting cooperative, safe behaviors to benefit all project area recreation resources and visitors. DWR, with input from DPR and other recreation providers and agency resource managers in the project area, will develop this I&E Program. The I&E Program is intended to be focused at project sites but will also have a broader context.

To maintain the I&E Program over the term of the new license, DWR and DPR will coordinate and provide long-term support for the program including annual O&M funding such as repair of vandalism to signs and kiosks, and the updates of signs over time.

The I&E Program will include:

- **Themes**—Review and selection of appropriate themes. Potential themes may include fish and wildlife with possible “Watchable Wildlife” sites (such as at the Monument Hill BR/DUA), water and energy conservation, volcanic history, hydropower, Native American cultures, pioneers, recreation activities available in the project area, recreation facility locations, boating hazards and others.

- **Media**—Review and selection of appropriate interpretive media to be used, such as signs and kiosks (roadside and at key sites), brochures, pamphlets, and others.

- **Media Design**—Review and selection of consistent media design, such as fonts, logos, layouts, colors, graphics, and others.

- **Prioritized Sites**—Review and selection of prioritized DWR-managed sites where the media will be located, such as at existing recreation sites.

- **Prioritized Services**—Review and selection of services to be provided at DWR-managed sites, such as reservoir clean-up day events and providing lake level information.

The I&E Program will include approximate cost estimates for facilities, artwork, design costs, and other costs. Continuing through implementation of the I&E Program, designs for signs, brochures, artwork, and other features will be developed by DWR's Public Affairs Office (formerly the Office of Water Education) and DPR's Interpretation and Education Division. As these designs are developed, I&E facilities, such as signs and kiosks and the artwork to go into these signs and kiosks, will be created and periodically

updated. Once constructed, the media will be sited and installed at selected sites per the plan for the I&E Program.

In Appendix A, the I&E Program includes a support component to help maintain the program over the term of the new license including implementation of appropriate maintenance procedures and practices, such as replacement of vandalized signs or changes in the messages of signs.

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APPENDIX A

Proposed Recreation Measures, Schedules, and Estimated Costs for Actions within the FERC Project Boundary

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Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Lake Oroville Management Unit				
Bidwell Canyon Complex (Boat Ramp/Day Use Area/ Marina/ Campground)	Capital Improvements:			$9,268,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Expand existing parking capacity at the Marina/Boat Ramp/Day Use Area to include approximately 215 new parking spaces (vehicle with trailer), of which a minimum of 90 parking spaces will be constructed at the existing location of the Big Pine Loop. Other new parking spaces will be provided at Ramp #2 (resurface the existing gravel lot with concrete at 700 feet msl to provide 80 spaces), and at Ramp #3 (45 spaces at the top of the ramp, with other parking along the ramp).	DBW, DWR	L 1	Included above
	• Provide one to two additional boarding docks to maximize boat launching capacity.	DBW, DWR	L 1	Included above
	• Provide ADA-related upgrades at the Marina to improve accessibility between site amenities, such as restrooms and the store.	Concessionaire, DPR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Construct a new relocated RV/tent campground loop with 30 to 38 new campsites to replace those sites lost to the proposed parking expansion project at the Big Pine Loop. If all 38 campsites cannot be reasonably relocated within the Bidwell Canyon Complex (likely south of the Gold Flat Loop), then DWR will construct up to an additional 15 new RV campsites at the Loafer Creek Complex to provide replacement campsite capacity in the area.	DWR, DPR	L 1	Included above
	• At the Bidwell Canyon Boat Ramp, extend 3 boat ramp lanes all the way down to 640 feet msl when feasible. This will involve a new Ramp #3 at lower elevations, and adding a new lane to a portion of existing Ramp #1. These extensions may be phased.	DBW, DWR	L 1	Included above
	Programmatic and O&M:			$775,000 Annual O&M w/ L1 Enhancements
	• Ensure adequate adjustment of boarding dock(s).	Concessionaire, DPR	L 1 to L 5	Included above
	• Ensure adequate and timely debris removal at boat ramp for safe boat launching.	DPR, DWR	L 1 to L 5	Included above
	• Provide boaters with additional information about substitute boating facilities.	DPR, DWR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Loafer Creek Complex (Boat Ramp/Day Use Area/ Campground/ Group Campgrounds)	Capital Improvements:			$4,420,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Conduct a feasibility study of new swim facility options at this and other Project No. 2100 locations. This site would receive priority given the existing swim lagoon. If a feasible and cost-effective option is identified at this site by DWR, compared to other Project No. 2100 sites, it will be constructed and operated.	DWR	L 1	Included above
	• Provide two new boarding docks to maximize boat launching capacity.	DBW, DWR	L 1	Included above
	• Replace the vandalized portable toilet at nearby Brooks Orchard with a new single-vault toilet building.	DWR, DPR	L1	Included above
	• Provide a fish cleaning station (assuming this new facility may be connected to existing infrastructure).	DWR, DPR	L1	Included above
	• Provide ADA enhancements to some campsites and the parking area at the Group and Equestrian Campgrounds. Other site amenities will also be improved to exceed some ADA-accessibility requirements.	DWR, DPR	L 1	Included above
	• Provide hardened ADA-accessible paths from the parking area and restrooms to the lower picnic area and swimming cove/beach.	DWR, DPR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Provide 2 new group RV campsites near the existing group campsites.	DWR, DPR	L 1	Included above
	• Provide up to 15 new RV campsites near or adjacent to the existing Loafer Creek Campground (if all 38 RV campsites cannot be reasonably relocated within the Bidwell Canyon Complex, as noted previously).	DWR, DPR	L 1	Included above
	• Construct equestrian-related improvements at the Equestrian Campground including a new paved access road, new feeder boxes, and a 50-foot round pen (Interim Project).	DPR, DWR	L 1 (Completed)	Included above
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide approximately 35 (if 15 from Bidwell Canyon Campground have previously been constructed) to approximately 50 new RV/tent campsites within the Loafer Creek Complex. Reevaluate the current mix of campsite types (RV versus tent) and modify the design to meet current demand if needed.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide 1-2 new RV group campsites, utilizing existing infrastructure where possible.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide a lower pool elevation car-top boat ramp to 750 ft. msl. Consider utilizing the existing gravel road to this shoreline elevation within the Loafer Creek Complex near the DUA.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide additional parking (vehicle and trailer) at the boat ramp.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	Programmatic and O&M:			$1,050,000 Annual O&M w/ L1 Enhance-ments
	• Ensure adequate debris removal at boat ramp for safe boat launching.	DPR, DWR	L 1 to L 5	Included above
	• Ensure adequate adjustment of boarding docks.	DPR, DWR	L 1 to L 5	Included above
	• Provide boaters with additional information about substitute boating facilities.	DPR, DWR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	Included above
Lime Saddle Complex (Boat Ramp/Day Use Area/ Marina/Campground/Group Campsite)	Capital Improvements:			$350,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide additional ADA improvements at the Marina (store area) and boat ramp day use picnic sites.	DWR, DPR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Conduct a feasibility study of potential swim facility options at this and other Project No. 2100 locations. This site would receive lesser priority than the swim facility study at the Loafer Creek Complex.	DWR	L 1	Included above
	• Provide an additional boarding dock to maximize boat launching capacity.	DWR, DBW	L 1	Included above
	• Based upon the results of the swim facility feasibility study, monitoring results during L2 to L5 phases, and determination of a sustained need for a second new swim facility within the Lake Oroville area, provide and operate a new swim facility at this site (site and type to be determined). This action assumes that a new swim facility has already been constructed at the Loafer Creek Complex, the most likely location.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide a new cove day use/ picnic area with picnic tables, ramadas, and pole stoves, and a new non-motorized, multiple-use trail linking the existing Campground with the existing Marina/Boat Ramp area around Parrish Cove.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide renovated and/or new day use picnic sites with picnic tables, pole stoves, and shade ramadas at the 2 Boat Ramp/Marina day use areas.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide 25-50 additional new RV/tent campsites in the future. Utilize the existing new infrastructure at this location.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide approximately 50-60 additional new Boat Ramp/ Marina parking spaces (vehicle with trailer) near the existing parking lot where feasible. The adjacent PG&E parcel to be transferred may be considered in this action, along with other Marina area improvements over time.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide 1-2 additional new RV/tent group campsites, utilizing the existing new infrastructure.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	<u>Programmatic and O&M:</u>			$450,000 Annual O&M w/ L1 Enhancements
	• Ensure adequate debris removal at boat ramp for safe boat launching.	DPR	L 1 to L 5	Included above
	• Ensure adequate adjustment of boarding docks.	DPR	L 1 to L 5	Included above
	• Provide boaters with information about substitute boating facilities and reservoir conditions.	DPR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Oroville Dam Overlook Day Use Area	Capital Improvements:			$0 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• None at this time.	DPR, DWR	L 1	---
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide up to 100 additional parking spaces and access routes/stairs in the area of the overlook facility, plus 4-5 additional picnic sites with tables and shade ramadas and interpretive facilities.	DPR, DWR	L 2 to L 5	Included in L2 to L5 budget
	Programmatic and O&M: • Provide annual O&M.		L 1 to L 5	$25,000 Annual O&M (L1 to L5)
Spillway Boat Ramp/ Day Use Area	Capital Improvements: •			$50,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide an additional boarding dock to maximize boat launching capacity.	DWR, DBW	L 1	Included above
	Programmatic and O&M:			$625,000 Annual O&M w/ L1 Enhancements

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Continue "en route" RV camping at Spillway, subject to FERC project security requirements.	DPR	L 1 to L 5	Included above
	• Ensure adequate adjustment of boarding docks.	DPR	L 1 to L 5	Included above
	• Ensure adequate debris removal at boat ramp for safe boat launching.	DPR	L 1 to L 5	Included above
	• Provide boaters with additional information about substitute boating facilities and changing reservoir conditions.	DPR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	Included above
Enterprise Boat Ramp	Capital Improvements:			$3,500,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Extend the existing boat ramp to approximately 750 feet msl to provide a low-water ramp, beginning at/near the toe of the existing ramp.	DWR, DBW	L 1	Included above
	• Provide a vault toilet building (Interim Project).	DWR	L 1 (Completed)	Included above
	• Provide 10 family picnic sites.	DWR, DPR	L 1	Included above
	• Provide 1 new boarding dock at the boat ramp.	DWR, DBW	L 1	Included above
	Programmatic and O&M:			$200,000 Annual O&M w/ L1 Enhancements
	• Ensure adequate adjustment of boarding dock.	DPR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Nelson Bar Car-Top Boat Ramp	Capital Improvements:			$50,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Install a sign, barrier, and/or gate at the terminus of the boat ramp during lowered reservoir elevations for safety purposes.	DWR	L 1	---
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR	L 1 to L 5	---
Vinton Gulch Car-Top Boat Ramp	Capital Improvements:			$33,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide car-top boat ramp improvements and additional signs to help users locate site (component of the RMP's I&E Program).	DPR	L 1	---
	Programmatic and O&M:			$40,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR	L 1 to L 5	---

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Dark Canyon Car-Top Boat Ramp	Capital Improvements:			$33,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide additional signs to help users locate site (component of the RMP's I&E Program).	DPR	L 1	Included above
	• Replace the defunct vault toilet building at this site.	DWR, DPR	L 1	Included above
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR	L 1 to L 5	---
Foreman Creek Car-Top Boat Ramp	Capital Improvements:			$2,863,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide site protection for culturally sensitive areas potentially impacted by recreational use (also a component of the RMP's I&E Program).	DWR, DPR	L 1	Included above
	• Reconfigure the recreational use to reroute visitor use away from culturally sensitive areas, including measures to restrict usage of the car-top boat ramp to a designated use area.	DWR, DPR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Provide site improvements within a designated use area including a vault toilet building, interpretive signage, and 5 to 10 picnic tables.	DWR, DPR	L 1	Included above
	Programmatic and O&M:			$250,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR	L 1 to L 5	---
Stringtown Car-Top Boat Ramp	Capital Improvements:			$34,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Provide additional roadside signs to help users locate site (component of the RMP's I&E Program).	DPR	L 1	Included above
	• Install a sign, barrier, or gate for safety purposes at the unmaintained abandoned road in the inundation zone.	DPR	L 1	Included above
	Programmatic and O&M:			$60,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR	L 1 to L 5	---
Lake Oroville Visitors Center	Capital Improvements:			$200,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Provide I&E Program and existing Visitors Center facility enhancements. Other potential future facility functions, activities and uses at the Visitors Center will be discussed and considered as a component of the RMP's future I&E Program.	DPR, DWR	L 1	Included above
	• Based upon monitoring results during L2 to L5 phases and determination of a need, provide additional parking if needed at this facility by expanding the existing parking area.	DPR, DWR	L 2 to L 5 (threshold dependent)	Included in L2 to L5 budget
	Programmatic and O&M:			$425,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Saddle Dam Trailhead Access	Capital Improvements:			$113,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Re-grade and gravel the existing equestrian TA parking area (Interim Project).	DWR, DPR	L 1 (Completed)	Included above
	• Provide a new vault toilet building (Interim Project).	DWR, DPR	L 1 (Completed)	Included above
	• Provide horse hitching posts and native shade trees (Interim Project).	DWR, DPR	L 1	Included above
	• Provide an additional non-motorized trail to the nearby shoreline at Saddle Dam (see Trails Program, Appendix D).	DWR, DPR	L 1	Included in Trails Program below

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Boat-in Campgrounds (BICs): Bloomer Area, Goat Ranch, Foreman Creek, and Craig Saddle	Capital Improvements:			$0 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• None at this time. Continue to monitor.	---	---	---
	Programmatic and O&M:			$200,000 Annual O&M
	• Provide annual O&M.	DPR	L 1 to L 5	---
Lake Oroville Scenic Overlook (SR 162 at bridge)	Capital Improvements:			$64,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Replace existing cyclone fence with a Caltrans-approved auto safety barrier (Interim Project).	DWR	L 1 (Completed)	Included above
	• Provide 2 new interpretive signs (Interim Project).	DWR, DPR	L 1 (Completed)	Included above
	Programmatic and O&M:			$25,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR, DPR, Caltrans	L 1 to L 5	---

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Floating Campsites	Capital Improvements:			$50,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Relocate 2-3 existing floating campsites closer to the Lime Saddle area of the reservoir.	DWR, DPR	L 1	---
	Programmatic and O&M:			$175,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Floating Restrooms	Capital Improvements:			$0 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• None at this time. Continue to monitor.	---	---	---
	Programmatic and O&M:			$260,000 Annual O&M
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Trails in the Lake Oroville and Dam Area (RMP Appendix D)	Capital Improvements:			$125,000 Total Capital (L1) L2 to L5 Total Future Capital (If Needed) – see Management Area Subtotal Budget
	• Construct a Saddle Dam area shoreline access trail. Reroute the existing Brad B. Freeman Trail near the Hyatt Powerplant Switchyard by Oroville Dam for security/ safety purposes.	DWR, DPR	L 1	Included above
	Programmatic and O&M:			$30,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR, DPR	L 1 to L 5	---
Lake Oroville Area Facility Replacement and Refurbishment (O&M)	Programmatic and O&M:			$400,000 Annual O&M Accrual Estimate ($20,000,000 Total O&M Replacement over 50 years) (L2 to L5)
	• Anticipated replacement or refurbishment of needed facilities and structures over the license term that have reached their life expectancy or are in need of replacement.	DWR, DPR	L 2 to L 5	---
Subtotal Lake Oroville Mgmt. Unit: **Capital Facility Costs - New Construction** **Future New Capital Facility Budget if Needed Based on Monitoring Results**				**$21,153,000 (L1)** **$20,000,000 (L2 to L5)**

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Subtotal Lake Oroville Mgmt. Unit: **Facility Operations Costs – Annual O&M With L1 Enhancements**				**$4,740,000 annually assuming L1 enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$20,000,000 (L2 to L5)**
Thermalito Diversion Pool Management Unit (includes portions of the Low Flow Channel)				
Diversion Pool DUA (North)	Capital Improvements:			$200,000 Total Capital (L1)
	• Provide an ADA-accessible fishing pier or platform at this or other nearby Diversion Pool location.	DWR, DPR, WCB	L 1	Included above
	• Provide additional day use facilities including 10 new picnic tables with pole stoves/grills along the Burma Road (north side).	DWR, DPR	L 1	Included above
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Lakeland Boulevard Trailhead Access / Diversion Pool DUA (South)	Capital Improvements:			$1,950,000 Total Capital (L1)
	• Create vehicle access to Diversion Pool through the construction of new realigned and improved road to the lower old railroad grade that is upstream of the Union Pacific Railroad bridge crossing of Diversion Pool.	DWR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Construct a new shoreline day use area at the Diversion Pool to include a gravel parking area that can accommodate vehicles with small trailers, vault toilet building, 10 picnic tables with pole stoves/grills, and access to water for hikers and car-top boaters.	DWR	L 1	Included above
	• Install fencing, as appropriate, to separate existing trail, and new access road and day use facilities, from the railroad tracks.	DWR	L 1	Included above
	Programmatic and O&M:			$150,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Feather River Fish Hatchery Day Use Area	Capital Improvements:			$30,000 Total Capital (L1)
	• The Fish Hatchery DUA with a Visitors Center and fish viewing platform will be considered as a component of the RMP's I&E Program. Additional interpretive signs and/or kiosks and paths will be added consistent with the future I&E Program.	DWR, DFG	L 1	Included above
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DFG, DWR	L 1 to L 5	---
Trails in the Diversion Pool/Low Flow Channel Area: Sewim Bo Trail	Capital Improvements:			$112,000 Total Capital (L1)

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Develop a non-motorized multiple-use trail from the Old Bath House (Nature Center) to the Diversion Dam (Interim Project).	DWR	L 1 (Completed)	Included above
	• Provide new picnic tables (some ADA compliant), shade ramadas, erosion control, and interpretive signs along this trail (Interim Project).	DWR	L 1 (Completed)	Included above
	Programmatic and O&M:			$25,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR	L 1 to L 5	---
Thermalito Diversion Pool Area Facility Replacement and Refurbishment (O&M)	Programmatic and O&M:			$20,000 Annual O&M Accrual Estimate ($1,000,000 Total O&M over 50 years) (L2 to L5)
	• Anticipated replacement or refurbishment of needed facilities and structures over the license term that have reached their life expectancy or are in need of replacement.	DWR, DPR	L 2 to L 5	---
Subtotal Thermalito Diversion Pool Mgmt. Unit: Capital Facility Costs - New Construction				**$2,292,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results				**$1,000,000 (L2 to L5)**
Subtotal Thermalito Diversion Pool Mgmt. Unit: Facility Operations Costs - Annual O&M With L1 Enhancements				**$275,000 annually assuming L1 enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$1,000,000 (L2 to L5)**

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Thermalito Forebay Management Unit				
North Thermalito Forebay Boat Ramp/Day Use Area/ Aquatic Center/"En Route" RV Campground	Capital Improvements:			$470,000 Total Capital (L1)
	• Provide additional short, non-motorized shoreline trail access points (subject to environmental review).	DWR, DPR	L 1	Included above
	• Provide new non-motorized trail opportunities including loop trails at the Forebay.	DWR, DPR	L 1	Included above
	• Conduct a feasibility study to evaluate warmer water swimming options at this site and at other Project No. 2100 locations. If feasible and cost-effective, construct new swimming area enhancements (construction cost excluded).	DWR	L 1	Feasibility study costs only included above
	• Provide a fish cleaning station (assuming this new facility may be connected to an existing septic system).	DWR, DPR	L1	Included above
	• Provide basic facility improvements to the Aquatic Center for basic needs.	DWR, DBW	L 1 (In Progress)	Included above
	Programmatic and O&M:			$550,000 Annual O&M w/ L1 Enhancements
	• Continue to monitor and maintain water quality at existing project swimming facilities.	DWR	L 1 to L 5	Included above
	• Provide annual O&M.	DPR	L 1 to L 5	Included above
South Thermalito Forebay Boat Ramp/Day Use Area	Capital Improvements:			$200,000 Total Capital (L1)
	• Provide an ADA-accessible fishing pier or platform.	DWR, DPR, WCB	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Provide improved landscaping and day use facilities including a new sandy beach, 5-10 picnic tables with pole stoves, and shade trees and shrubs.	DWR	L 1	Included above
	Programmatic and O&M:			$115,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DPR, DWR	L 1 to L 5	---
Trails in the Thermalito Forebay Area: (RMP Appendix D)	Capital Improvements:			$225,000 Total Capital (L1)
	• Construct short shoreline access trails and Forebay area loop trail(s).	DWR, DPR	L 1	---
	Programmatic and O&M:			$15,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR, DPR	L 1 to L 5	---
Thermalito Forebay Area Facility Replacement and Refurbishment (O&M)	Programmatic and O&M:			$40,000 Annual O&M Accrual Estimate ($2,000,000 Total O&M over 50 years) (L2 to L5)
	• Anticipated replacement or refurbishment of needed facilities and structures over the license term that have reached their life expectancy or are in need of replacement.	DWR, DPR	L 2 to L 5	---

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Subtotal Thermalito Forebay Mgmt. Unit: **Capital Facility Costs - New Construction**				**$895,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results				**$2,000,000 (L2 to L5)**
Subtotal Thermalito Forebay Mgmt. Unit: **Facility Operations Costs – Annual O&M With L1 Enhancements**				**$680,000 annually assuming L1 enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$2,000,000 (L2 to L5)**
Thermalito Afterbay Management Unit				
Wilbur Road Boat Ramp/ Day Use Area	Capital Improvements:			$10,000 Total Capital (L1)
	• Provide roadway directional signs for easier locating of this site (component of the RMP's I&E Program).	DWR	L 1	Included above
	Programmatic and O&M:			$25,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR	L 1 to L 5	---
Larkin Road Car-Top Boat Ramp	Capital Improvements:			$250,000 Total Capital (L1)
	• Construct 5-10 new picnic tables with pole stoves and shade ramadas.	DWR	L 1	Included above
	• Provide a new vault toilet building.	DWR	L 1	Included above
	• Provide a new sandy beach and a new swimming buoy line approximately 100-200 feet from the shoreline.	DWR	L 1	Included above
	• Provide roadside directional signs for easier locating of this site (component of the RMP's I&E Program).	DWR	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	Programmatic and O&M:			$50,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR	L 1 to L 5	---
Monument Hill Boat Ramp/ Day Use Area	Capital Improvements:			$0 Total Capital (L1)
	• None at this time. Continue to monitor.	---	---	---
	Programmatic and O&M:			$100,000 Annual O&M
	• Provide annual O&M.	DWR	L 1 to L 5	---
Model Aircraft Flying Facility	Capital Improvements:			$27,000 Total Capital (L1)
	• Provide new paving at the runways (Interim Project).	DWR	Completed	Included above
	• Regrade and regravel the parking area (Interim Project).	DWR	Completed	Included above
	• Construct aircraft staging tables and install new picnic tables with shade ramadas (Interim Project).	DWR	Completed	Included above
	• Provide new vault toilet building, bulletin/information board, and fencing (Interim Project).	DWR	Completed	Included above
	Programmatic and O&M:			$25,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M. If off-site impacts are observed, fencing will be constructed to prevent damage to sensitive habitat in the area.	DWR, Permittee	L 1 to L 5	---
Thermalito Afterbay Area Facility Replacement and Refurbishment (O&M)	Programmatic and O&M:			$20,000 Annual O&M Accrual Estimate ($1,000,000 Total O&M over 50 years) (L2 to L5)

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Anticipated replacement or refurbishment of needed facilities and structures over the license term that have reached their life expectancy or are in need of replacement.	DWR, DPR	L 2 to L 5	---
Subtotal Thermalito Afterbay Mgmt. Unit: **Capital Facility Costs - New Construction**				**$287,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results				**$1,000,000 (L2 to L5)**
Subtotal Thermalito Afterbay Mgmt. Unit: **Facility Operations Costs - Annual O&M With L1 Enhancements**				**$200,000 annually assuming L1 enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$1,000,000 (L2 to L5)**
Oroville Wildlife Area (OWA) Management Unit				
Afterbay Outlet Area (Boat Ramp/Day Use Area/Campground)	Capital Improvements:			$2,450,000 Total Capital (L1)
	• Provide a new designated primitive RV/tent camping area (no hookups) in the OWA north of the Outlet Channel within approximately 40 acres adjacent to existing parking and day use areas near the outlet. Establish designated hardened tent/RV campsites with picnic tables, pole stoves and gravel spurs with vehicle barriers. The total number of new campsites will be based on monitoring demand over time, but will not exceed the 40-acre area. Twenty new RV/tent campsites (minimum) and up to 40 sites (maximum) will be provided initially within the 40-acre site.	DWR, DFG	L 1	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
	• Provide a new designated day use area at the Thermalito Afterbay outlet south of the Outlet Channel near the river but away from the camping area. Install 5-10 picnic tables and pole stoves.	DWR, DFG	L 1	Included above
	• Regravel existing access roads. Revegetate disturbed areas with native arid landscaping for shade and aesthetics, consistent with wildlife habitat goals. Provide 1-2 additional vault toilet buildings if needed.	DWR, DFG	L 1	Included above
	• Provide roadside directional signs for easier locating of this site (component of I&E Program).	DWR	L 1	Included above
	Programmatic and O&M:			$300,000 Annual O&M w/ L1 Enhancements
	• Provide annual O&M.	DWR, DFG	L 1 to L 5	--
Oroville Wildlife Area Dispersed Use Sites and Dispersed River and Pond Access Sites	Capital Improvements:			$375,000 Total Capital (L1)
	• Provide 2 Watchable Wildlife sites, and new trash receptacles, vehicle barriers, foot paths, signs, and site hardening and closure measures.	DWR, DFG	L 1	Included above
	Programmatic and O&M:			$30,000 Annual O&M w/ L1 Enhancements
	• Provide recurring O&M of appropriate dispersed sites and Watchable Wildlife sites, including trash and debris pickup, regulation enforcement, and site monitoring.	DWR, DFG	L 1 to L 5	Included above

Table A-1. Proposed recreation facility capital improvement and O&M measures.

Resource Area / Site	Capital Improvement and Programmatic/O&M Proposed Actions[3]	Capital Improvement and O&M Responsible Entity	Phasing[1]	Estimated Costs[2]
Oroville Wildlife Area Facility Replacement and Refurbishment (O&M)	Programmatic and O&M:			$20,000 Annual O&M Accrual Estimate ($1,000,000 Total O&M over 50 years) (L2 to L5)
	• Anticipated replacement or refurbishment of needed facilities and structures over the license term that have reached their life expectancy or are in need of replacement.	DWR, DPR	L 2 to L 5	---
Subtotal OWA Mgmt. Unit: **Capital Facility Costs - New Construction**				**$2,825,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results				**$1,000,000 (L2 to L5)**
Subtotal OWA Mgmt. Unit: **Facility Operations Costs - Annual O&M/Programmatic With L1 Enhancements**				**$330,000 annually assuming L1 enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$1,000,000 (L2 to L5)**
TOTAL TABLE A-1 **Total Project Draft RMP Capital Facility Costs: Capital Facility Costs - New Construction (L1)**				**$27,452,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results (L2 to L5) (See Table A-2 for Project-wide programmatic capital actions)				**$25,000,000 (L2 to L5)**
Total Project Draft RMP Facility Operations Costs: Facility Operations Costs - Annual O&M/ Programmatic With L1 Enhancements				**$6,225,000 Annual O&M Assuming L1 Enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed (See Table A-2 for Project-wide programmatic O&M actions)				**$25,000,000 (L2 to L5)**

[1] *Phasing is categorized by decade after the new FERC license is issued (assumed to be 2007 for planning purposes) - L1 = 2007-2016, L2 = 2017-2026, L3 = 2027-2036, L4 = 2037-2046, and L5 = 2047-2056. The exact timing of the proposed measures in phases L2 through L5 may be triggered by reaching threshold criteria per the RMP's Recreation Monitoring Program (see Section 7.3).*

[2] *Estimated costs are in 2005 dollars. Annual O&M cost responsibility is currently divided between the licensee and other State agency funding sources. The licensee is responsible for implementation of the new license.*

[3] *Refer to draft RMP Section 6.0, Appendix C (Site Plans), and Appendix D (Trails Program) for additional details on the proposed recreation measures in this table.*

Table A-2. Proposed recreation programmatic measures.

Programmatic Measure	Measure Details[3]	Programmatic Responsibilities	Phasing[1]	Estimated Costs[2]
DWR to implement the RMP programs following license issuance and acceptance	• Continue to provide and plan for O&M at existing and new recreation sites.	DWR, DPR	L 1 to L 5 and ongoing	Included in previous Table A-1
	• Comply with ADA (as amended) and other applicable regulations at existing and new recreation facilities, such as toilet building replacement.	DWR, DPR	L 1	$68,000 Capital (L1)
	• Implement the final RMP including providing periodic recreation monitoring per the RMP's Recreation Monitoring Program through the term of the new license. This program has thresholds or triggers established for additional facility development or expansion. Update/revise the RMP over the new license term.	DWR, DPR	L 1 to L 5 and ongoing	Average of $65,000 annual O&M (L1 to L5) ($3,250,000 total O&M over 50 yrs.)
	• Implement a comprehensive non-motorized trails program. See RMP Appendix D.	DPR, DWR	L 1	Included in previous Table A-1
	• More fully develop and implement the RMP Interpretive and Education (I&E) Program, using existing agency personnel where possible	DPR, DWR	L 1 (program develop-ment) and L 1 to L 5 (program implemen-tation	$100,000 Capital (L1) $20,000 annually for I&E program O&M (L1 to L5)
	• Better clarify the role of DPR, DFG, DBW, and other responsible entities in managing, maintaining, and developing Project No. 2100 recreational resources.	DWR	In Progress	In Progress

Table A-2. Proposed recreation programmatic measures.

Programmatic Measure	Measure Details[3]	Programmatic Responsibilities	Phasing[1]	Estimated Costs[2]
DWR, in cooperation with DPR, DFG and other appropriate agencies, will work to resolve conflicts between wildlife management objectives and recreational activities and potential wildfire hazards to visitors in the OWA.	• Provide additional trash receptacles and signage at access points and provide for additional trash pick-up.	DPR, DWR	L 1 to L 5	Included in previous Table A-1
	• Post both regulatory and educational signs detailing illegal fishing practices and consequences.	DFG, DPR, DWR	L 1	Included in previous Table A-1
	• Prepare and implement a wildfire evacuation plan for visitors to the OWA.	DFG, DPR, DWR	L 1	$50,000 Capital (L 1); $10,000 Annual O&M (L1 to L5)
	• Provide additional law and regulation enforcement in the OWA.	DFG, DPR, Butte Co. Sheriff's Office, and/or CHP as appropriate	L 1 to L 5	$250,000 Capital (L1); $166,000 Annual O&M (L1 to L5)
	• Consider locating and operating 2 ADA-accessible Watchable Wildlife sites within the OWA.	DFG, WCB	L 1	Included in previous Table A-1
Annual Lake Oroville July 4th Fireworks	• Cooperate with local groups in planning of annual fireworks presentation at Lake Oroville on or about the 4th of July.	DWR, DPR, CHP	L 1 to L 5	$210,000 Annual O&M (L1 to L5)
Locate FERC license Coordination Unit in Oroville	• Provide staff and locate a FERC License Coordination Unit (LCU) at DWR's Oroville Field Division office. The LCU will manage new License Orders and will coordinate new license implementation.	DWR	L 1 to L 5	$50,000 Annual O&M (L1 to L5)
TOTAL TABLE A-2: Other Project Recreation Resource Programmatic Costs – Capital and O&M				**$468,000 Capital (L1)** **$521,000 Annual O&M (L1 to L5)**

Table A-2. Proposed recreation programmatic measures.

Programmatic Measure	Measure Details[3]	Programmatic Responsibilities	Phasing[1]	Estimated Costs[2]
TOTAL TABLES A-1 AND A-2 – CAPITAL				
Total Project Draft RMP Capital Facility Costs: Capital Facility Costs - New Construction (L1)				**$27,920,000 (L1)**
Future New Capital Facility Budget if Needed Based on Monitoring Results				**$25,000,000 (L2 to L5)**
TOTAL TABLES A-1 AND A-2 – O&M				
Total Project Draft RMP Facility Operations Costs: Facility Operations Costs - Annual O&M/ Programmatic With L1 Enhancements				**$6,746,000 Annual O&M Assuming L1 Enhancements**
Future Facility Replacement and Refurbishment O&M Budget if Needed				**$25,000,000 (L2 to L5)**

[1] Phasing is categorized by decade after the new FERC license is issued (assumed to be 2007 for planning purposes) - L1 = 2007-2016, L2 = 2017-2026, L3 = 2027-2036, L4 = 2037-2046, and L5 = 2047-2056. The exact timing of the proposed measures in phases L2 through L5 may be triggered by reaching threshold criteria per the RMP's Recreation Monitoring Program (see Section 7.3).

[2] Estimated costs are in 2005 dollars. Annual O&M cost responsibility is currently divided between the licensee and other State agency funding sources. The licensee is responsible for implementation of the new license.

[3] Refer to draft RMP Section 6.0, Appendix C (Site Plans), and Appendix D (Trails) for additional details on the proposed recreation measures in this table.

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APPENDIX B

Proposed Recreation Measures, Schedules, and Estimated Costs for Actions outside the FERC Project Boundary

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Table B-1. Proposed recreation facility capital improvement and O&M measures outside the FERC boundary.

Resource Area/Site	Capital Improvements and Programmatic and O&M Proposals	Capital Improvement and O&M Responsibilities	Phasing	Estimated Costs[1]
Low Flow Channel/Feather River				
Riverbend Park	• Helped fund O&M, planning, design, and construction of this site (Interim Project).		Concluded	$3,000,000
Oroville Wildlife Area				
Rabe Road Shooting Range	• Re-graded and regraveled the access road and parking area (Interim Project). • Added targets and a safety berm (Interim Project).		Concluded Concluded	$24,000 Included above
Total Capital Facility and O&M Costs outside the FERC Boundary				**$3,024,000**

[1] *Estimated costs are in 2005 dollars.*

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APPENDIX C

Locations of Proposed Recreation Measures and Conceptual Site Plans

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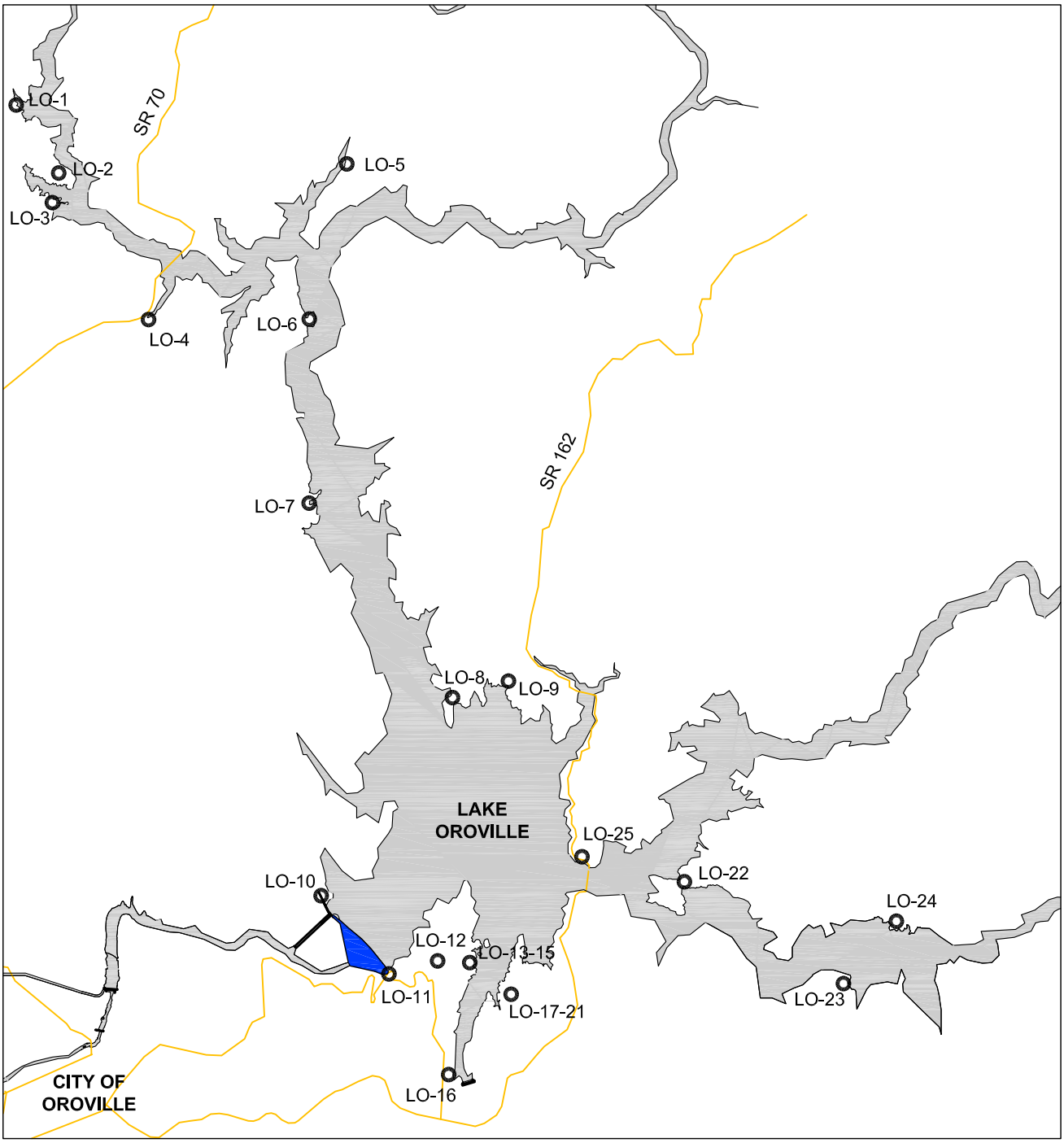

SOURCE: EDAW Inc., 2003

Lake Oroville (LO) Recreation Sites:

LO-1 Nelson Bar Car-top Boat Ramp
LO-2 Lime Saddle Campground
LO-3 Lime Saddle Boat Ramp, Marina and DUA
LO-4 Vinton Gulch Car-top Boat Ramp
LO-5 Dark Canyon Car-top Boat Ramp
LO-6 Goat Ranch BIC
LO-7 Bloomer BICs
LO-8 Foreman Creek BIC
LO-9 Foreman Creek Car-top Boat Ramp
LO-10 Spillway Boat Ramp and DUA
LO-11 Oroville Dam Overlook DUA
LO-12 Lake Oroville Visitors Ctr.
LO-13 Bidwell Canyon Boat Ramp and DUA
LO-14 Bidwell Canyon Marina and Campground
LO-15 Bidwell Canyon South Area
LO-16 Saddle Dam DUA
LO-17 Loafer Creek Group Camp and Equestrian Camp
LO-18 Loafer Creek Campground -- South Loop
LO-19 Loafer Creek Campground -- North Loops
LO-20 Loafer Creek Boat Ramp
LO-21 Loafer Creek DUA
LO-22 Craig Saddle BIC
LO-23 Stringtown Car-top Boat Ramp
LO-24 Enterprise Boat Ramp
LO-25 SR 162 Scenic Overlook

North

Not to Scale

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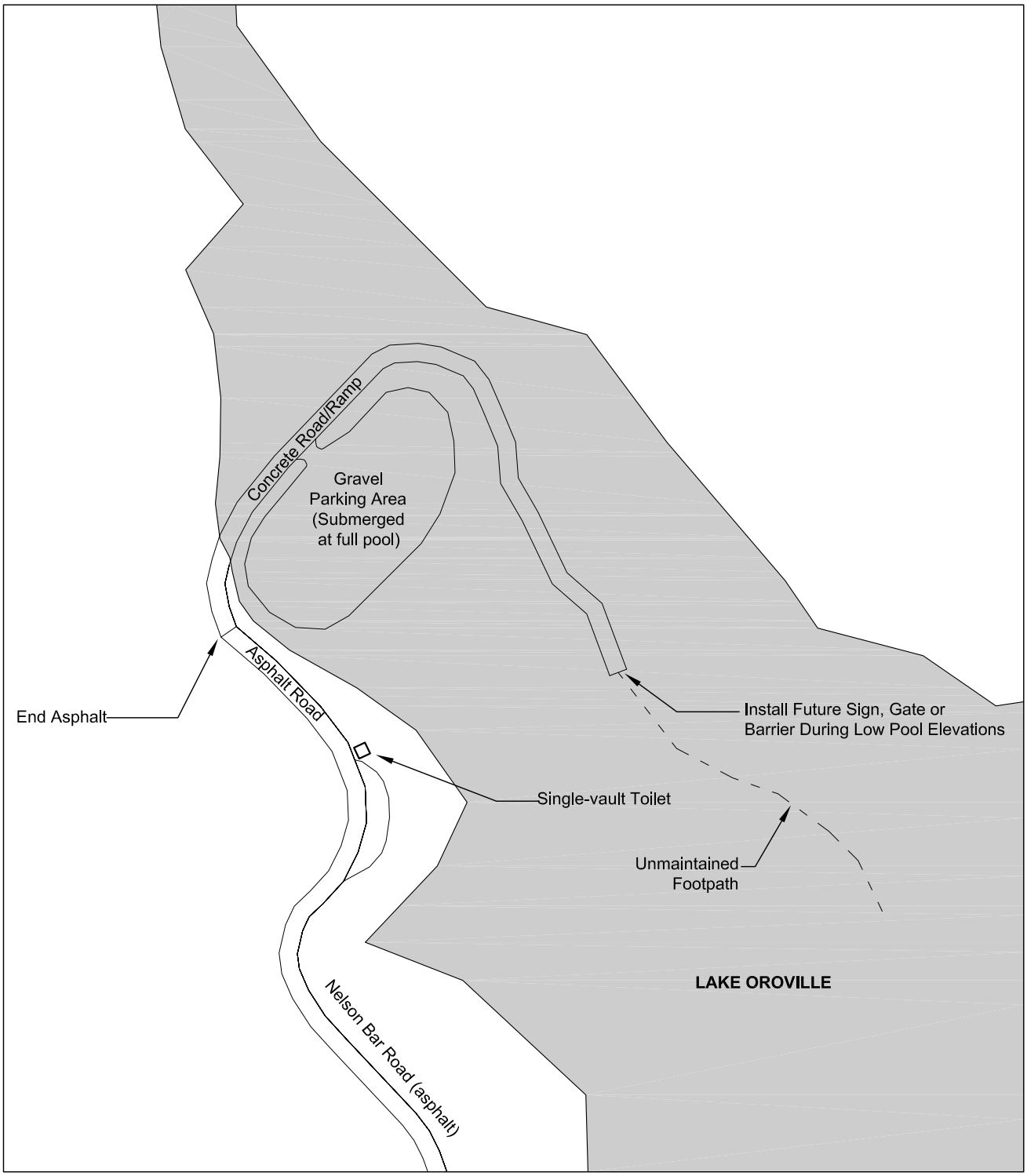
Lake Oroville Recreation Site Key Map



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Install a sign, gate or barrier at terminus of the car-top boat ramp road during low water for safety purposes.

North 0' 75' 150' 300'

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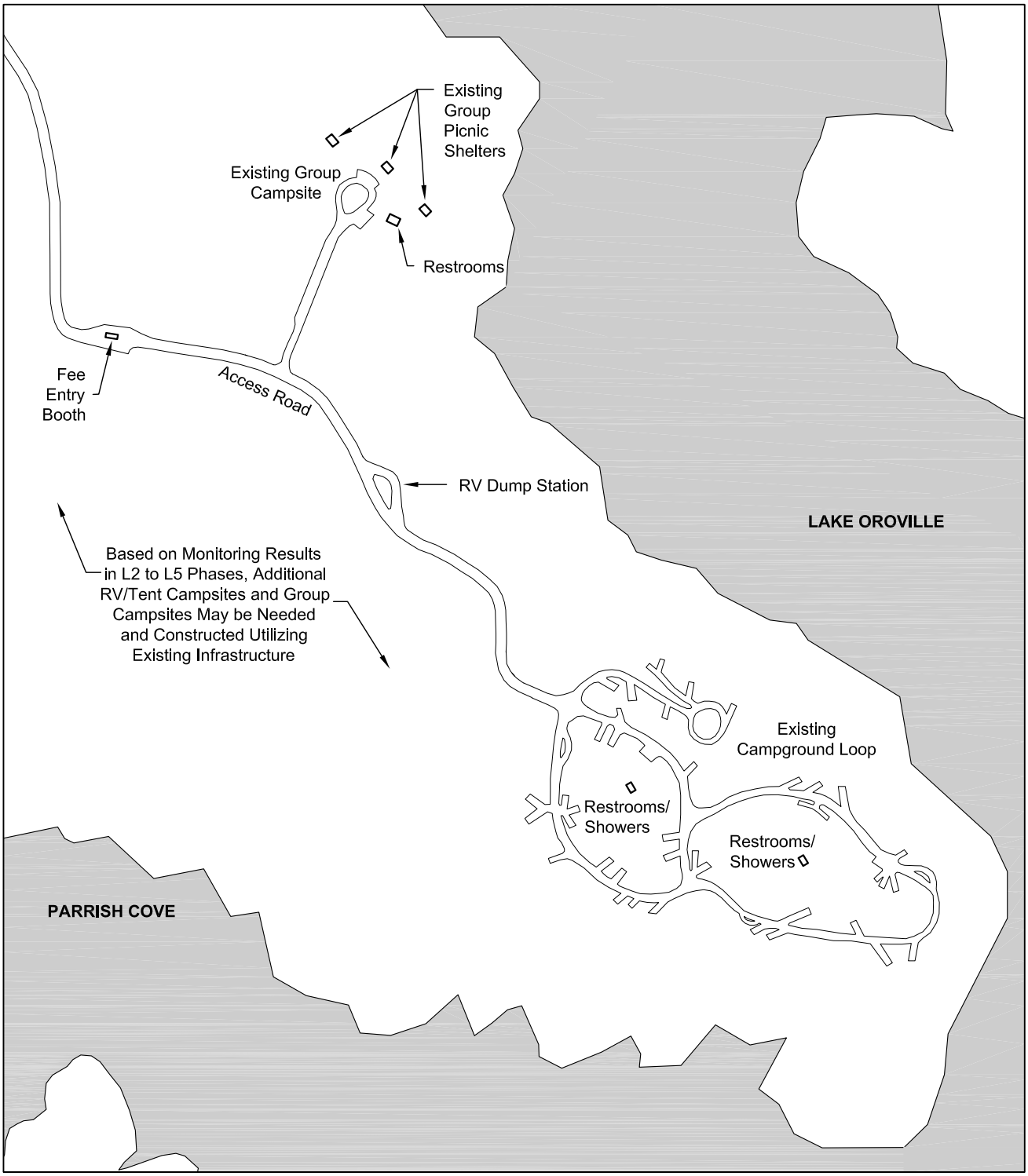
Figure # LO-1
Nelson Bar Car-top Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Conduct a feasibility study of potential swim facility options at this and other P2100 locations to provide a new developed swimming facility during the primary 4-month recreation season. The Loafer Creek site would be the priority location for an initial swim facility.
-- Relocate 2-3 existing floating campsites to the Lime Saddle area.
-- Based on monitoring results during the L2 to L5 phases, additional campsites may be needed in the future. Up to 25-50 new RV/tent campsites may be added utilizing existing infrastructure.
-- Based on monitoring results during the L2 to L5 phases, 1-2 additional group RV campsites may be needed in the future. If so, these may be added utilizing existing infrastructure.

North 0' 225' 450' 900'

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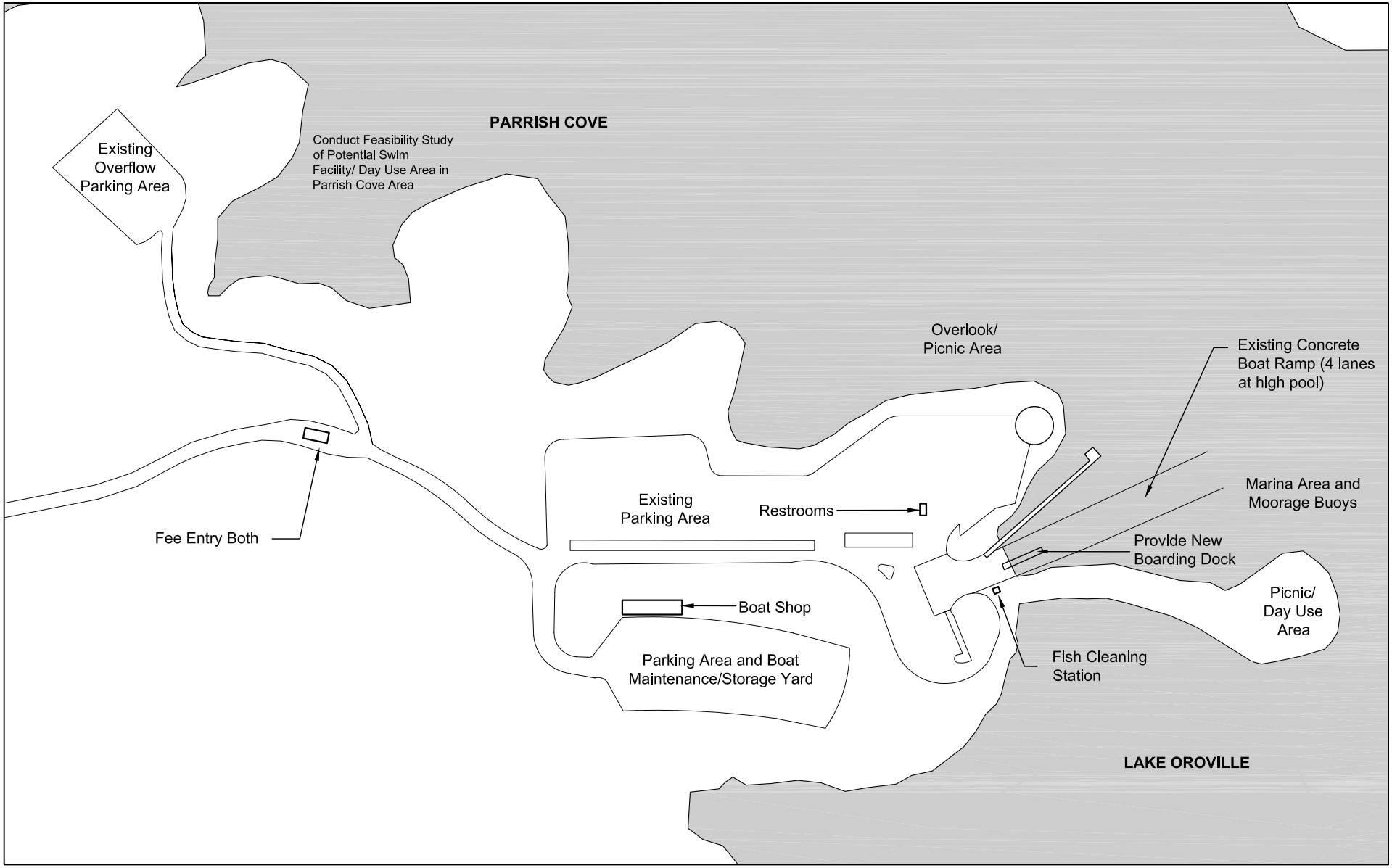
Figure # LO-2
Lime Saddle Campground



Proposed Recreation Actions:
-- Provide 1 additional boarding dock(s).
-- Ensure adequate adjustment of the boarding dock(s) and adequate debris removal at boat ramp and adjacent facilities.
-- Provide boaters with information about substitute boating facilities and reservoir conditions.

Based on monitoring results during the L2 to L5 phases:
-- Additional parking spaces may be needed in the boat ramp/marina area. Approximately 60 new parking spaces may be constructed.
--Swim facility capacity at Lake Oroville may be reached in the future. If so, this site may be considered for new swim facilities if feasible and cost efficient.
-- Improvements and/or expansion of existing day use picnic sites near the boat ramp may be needed. If needed, these facilities would be enhanced in the future.
-- Additional day use and trail improvements may be needed to enhance campground and boat ramp/marina visitor experiences and needs and link these two areas. If so, a new day use site and trail in the Parrish Cove area may be constructed.

SOURCE: EDAW Inc., 2003

North

0' 125' 250' 500'

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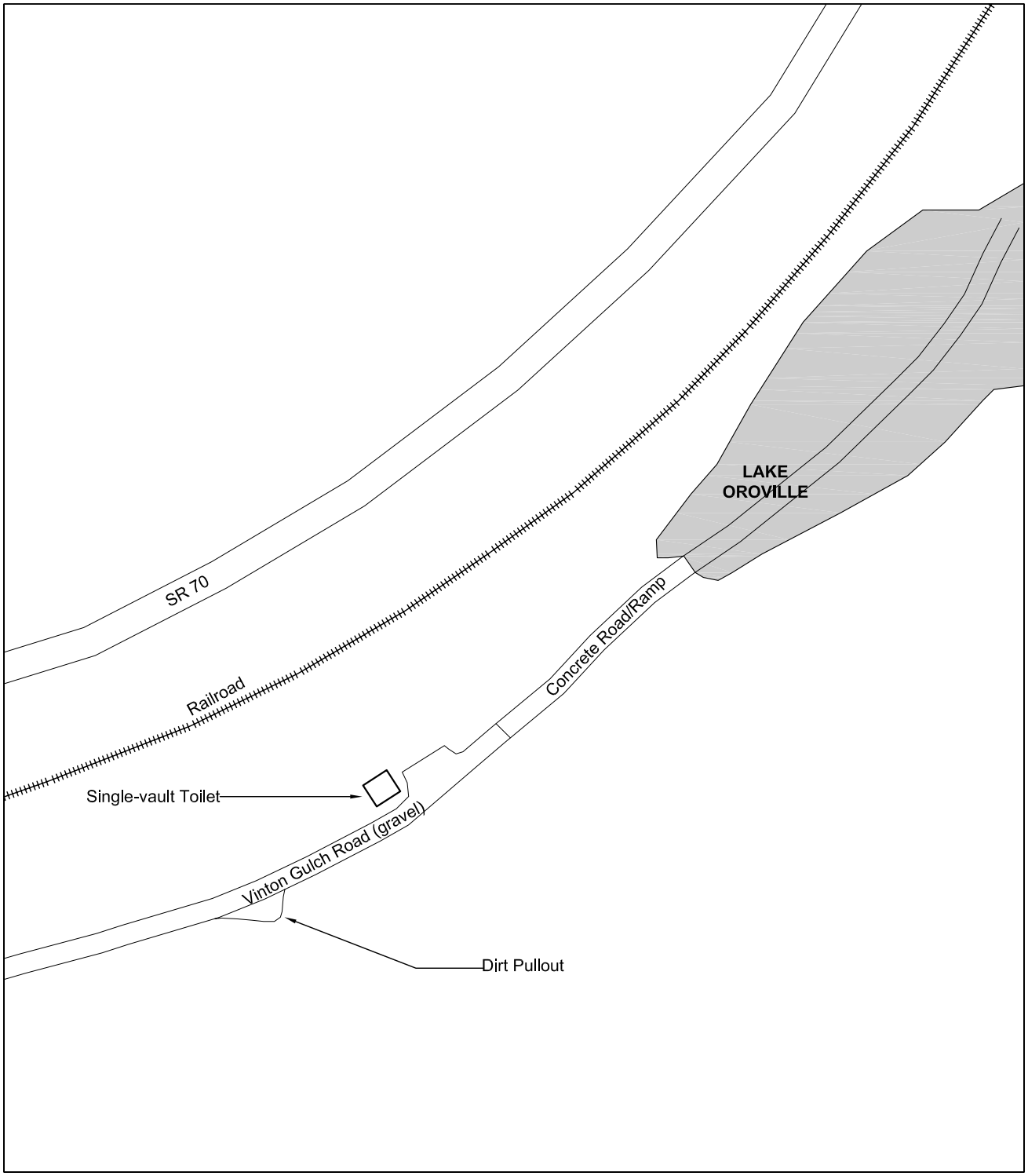
Figure # LO-3
Lime Saddle Boat Ramp, Marina and Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide additional directional signs (as a component of the proposed I&E Program) to aid users in locating this site.

North 0' 75' 150' 300'

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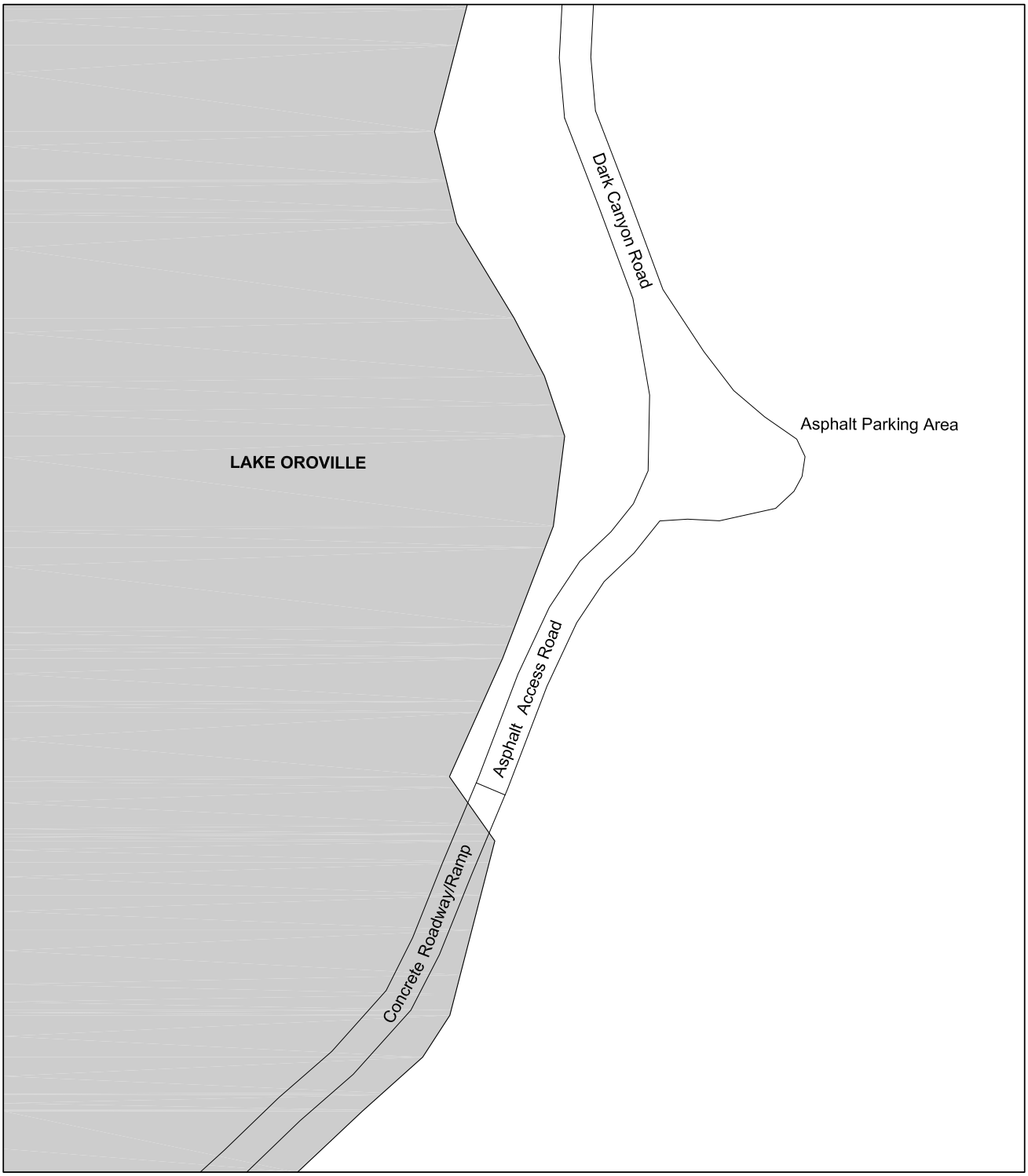
Figure # LO-4
Vinton Gulch Car-top Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide additional directional signs (as a component of the proposed I&E Program) to aid users in locating this site.
-- Replace the toilet building that was vandalized.

North 0' 50' 100' 200'

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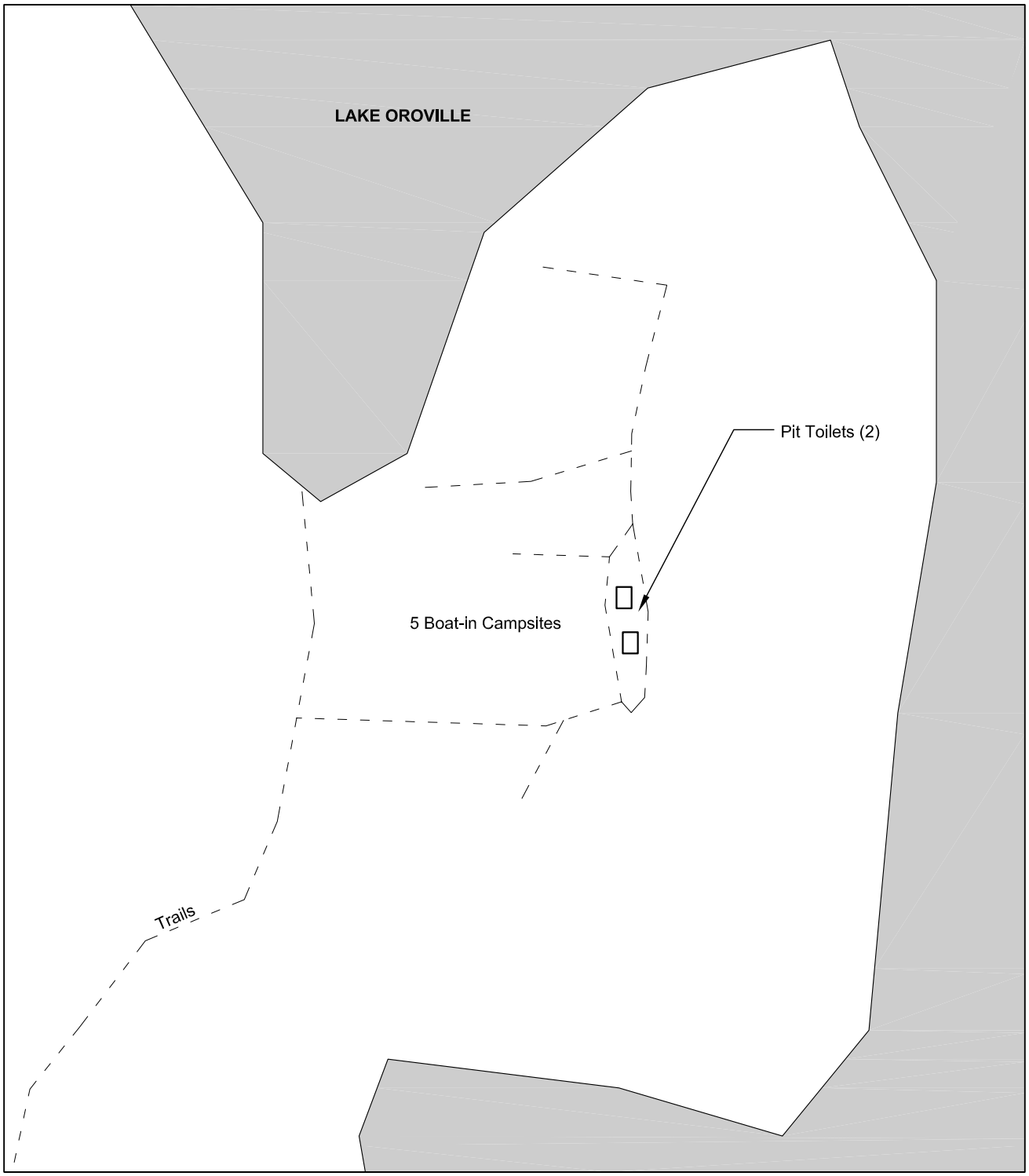
Figure # LO-5
Dark Canyon Car-top Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Monitor use and conduct regular O&M activities to ensure cultural resource protection in concert with ongoing recreational use.

North 0' 75' 150' 300'

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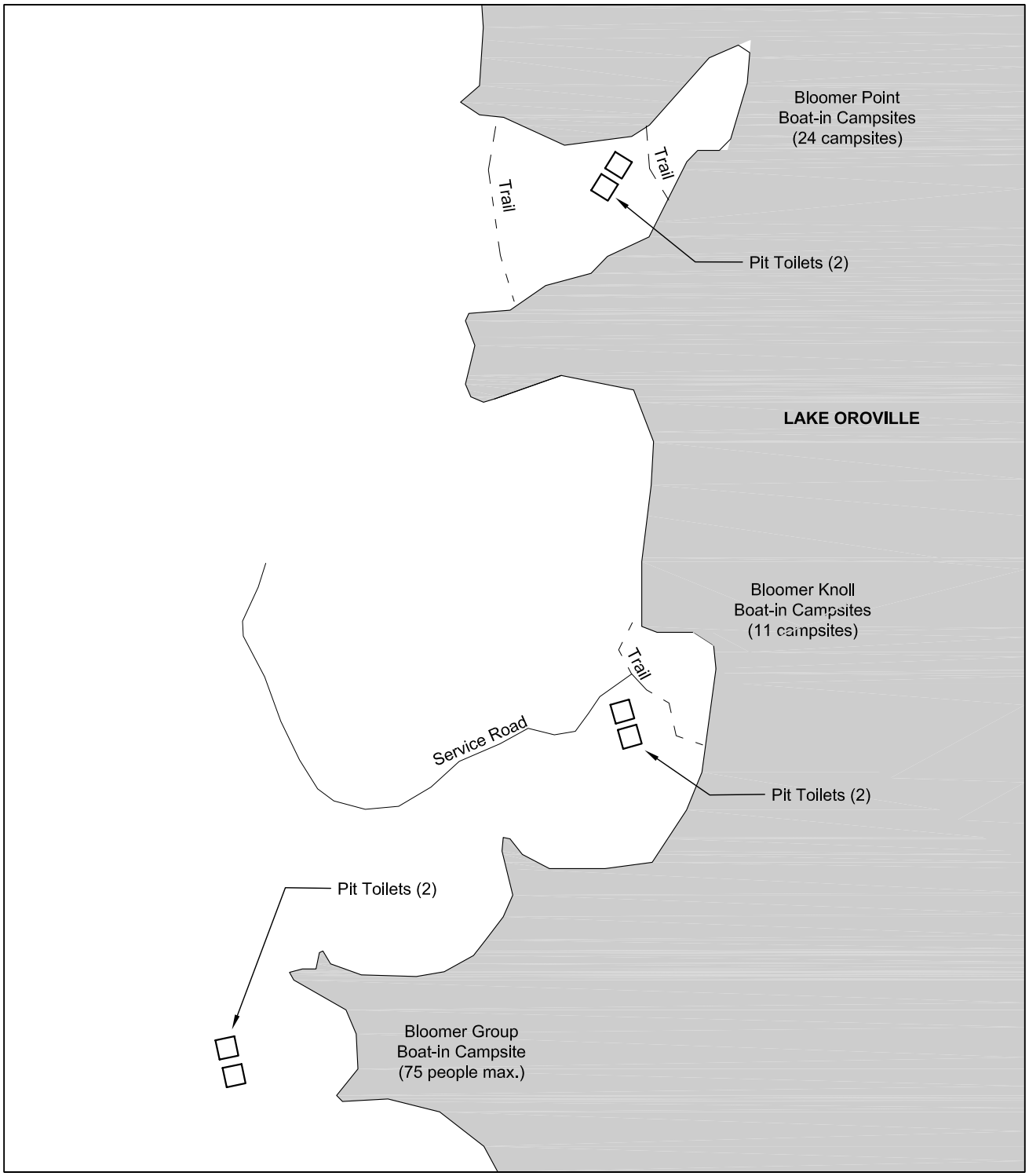
Figure # LO-6
Goat Ranch Boat-in Campground



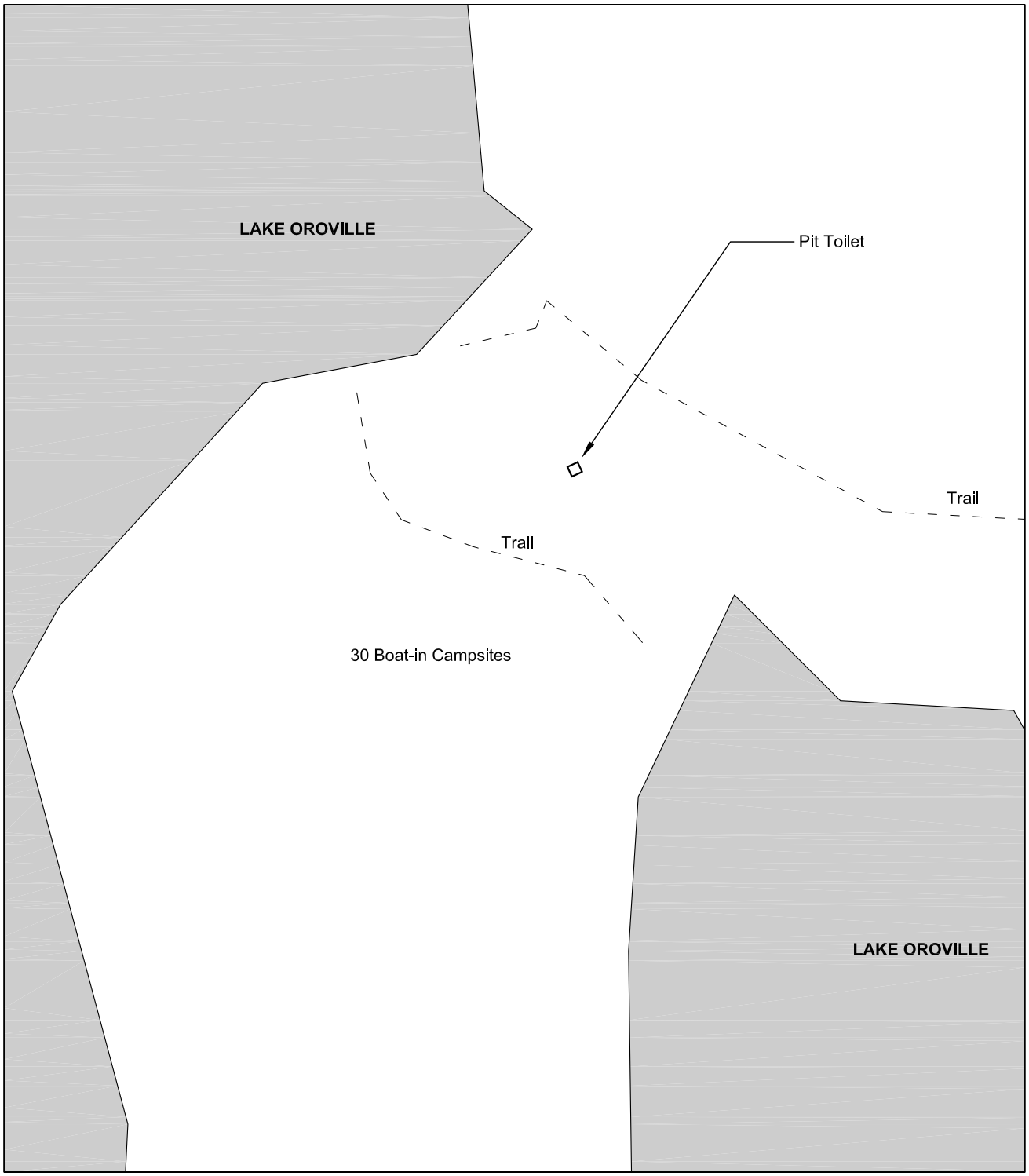
SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Monitor use and conduct regular O&M activities to ensure cultural resource protection in concert with ongoing recreational use.

North 0' 225' 450' 900'

Oroville Facilities Relicensing
FERC Project No. 2100
State of California
Department of Water Resources

Figure # LO-7
Bloomer Boat-in Campsites



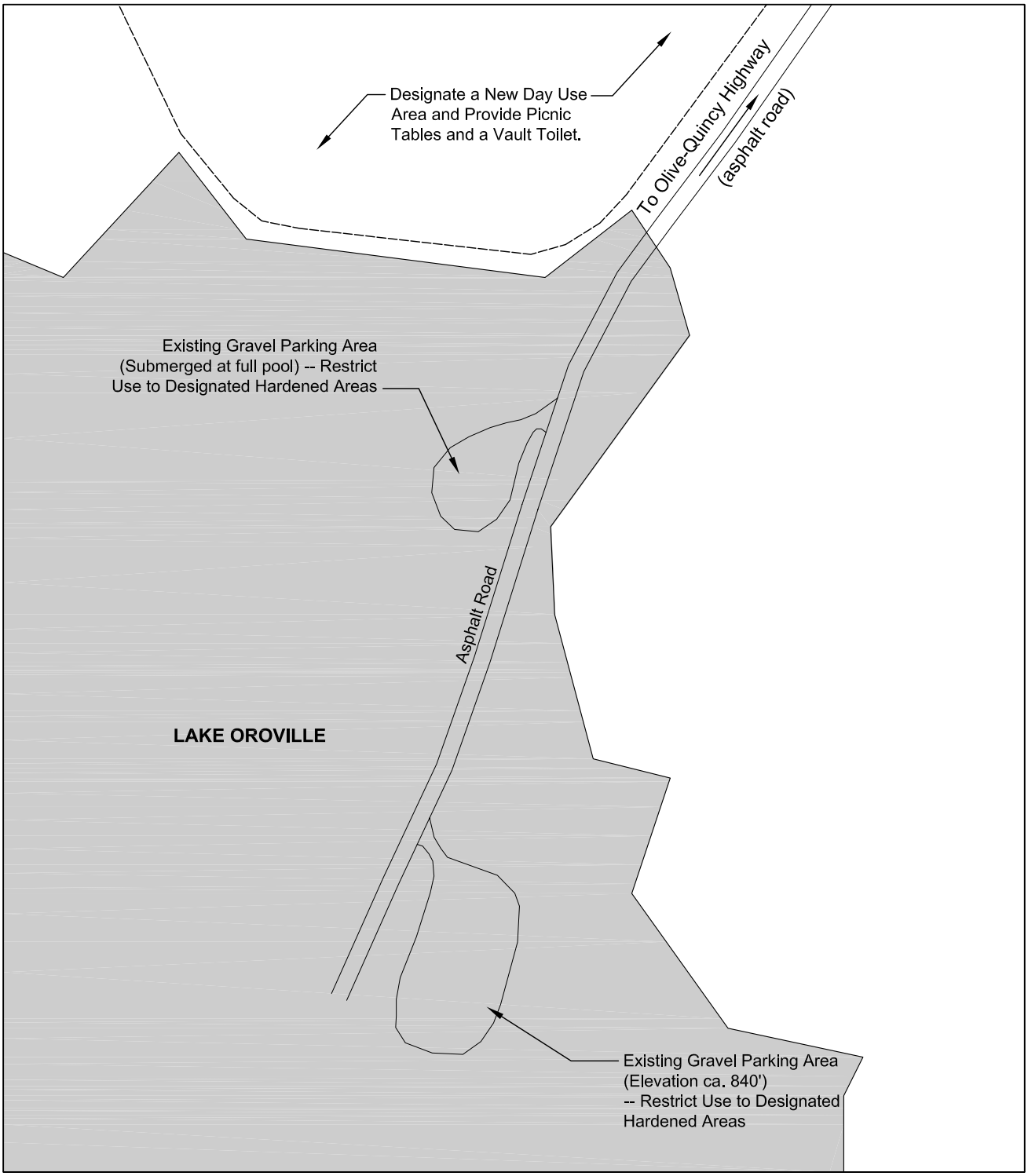
SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Monitor use and conduct regular O&M activities to ensure cultural resource protection in concert with ongoing recreational use.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
FERC Project No. 2100
State of California
Department of Water Resources

Figure # LO-8
Foreman Creek Boat-in Campground



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide site protection for the preservation of cultural and other sensitive resources.
-- Reconfigure site to reroute visitor use away from culturally sensitive areas, including measures to restrict usage of car-top boat ramp to a designated use area.
-- Provide site improvements including interpretive signage, 5-10 picnic tables and a vault toilet within a designated use area.

North 0' 100' 200' 400'

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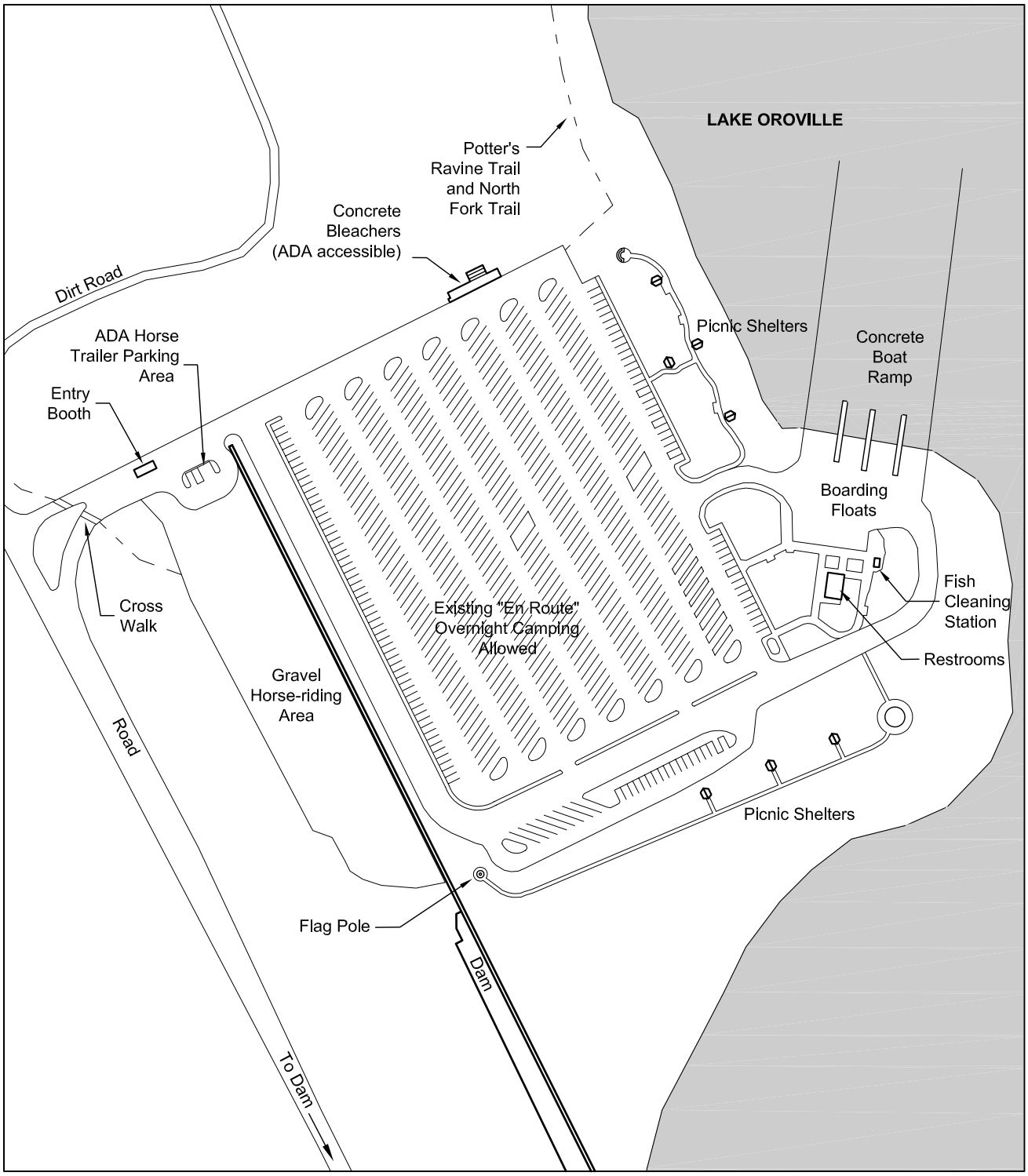
Department of Water Resources

Figure # LO-9
Foreman Creek Cartop Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Continue RV "En Route" camping at this site subject to security concerns.

-- Ensure adequate adjustment of the boarding docks and adequate debris removal at boat ramps and adjacent facilities.

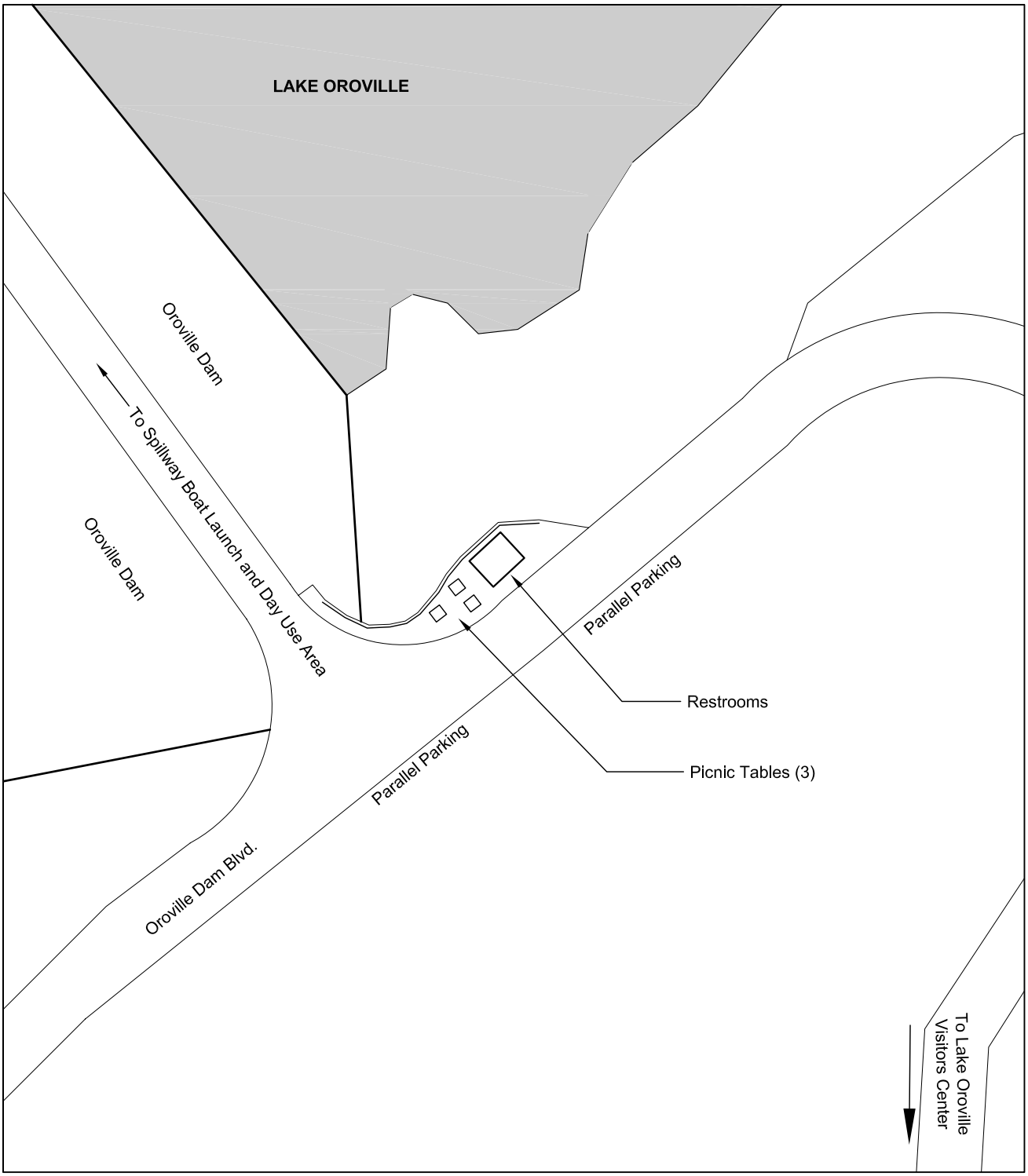
-- Provide boaters with additional information about substitute boating facilities and changing reservoir conditions.

North

0' 100' 200' 600'

Oroville Facilities Relicensing
FERC Project No. 2100
State of California
Department of Water Resources

Figure # LO-10
Spillway Boat Ramp and Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- None at this time (L1 phase).
-- Based on monitoring results during the L2 to L5 phases, additional parking and/or day use facilities may be needed. If so, up to 100 parking parking spaces may be constructed in the area and new picnic sites, shade ramadas, and interpretive facilities added when needed.

North 0' 50' 100' 200'

Oroville Facilities Relicensing
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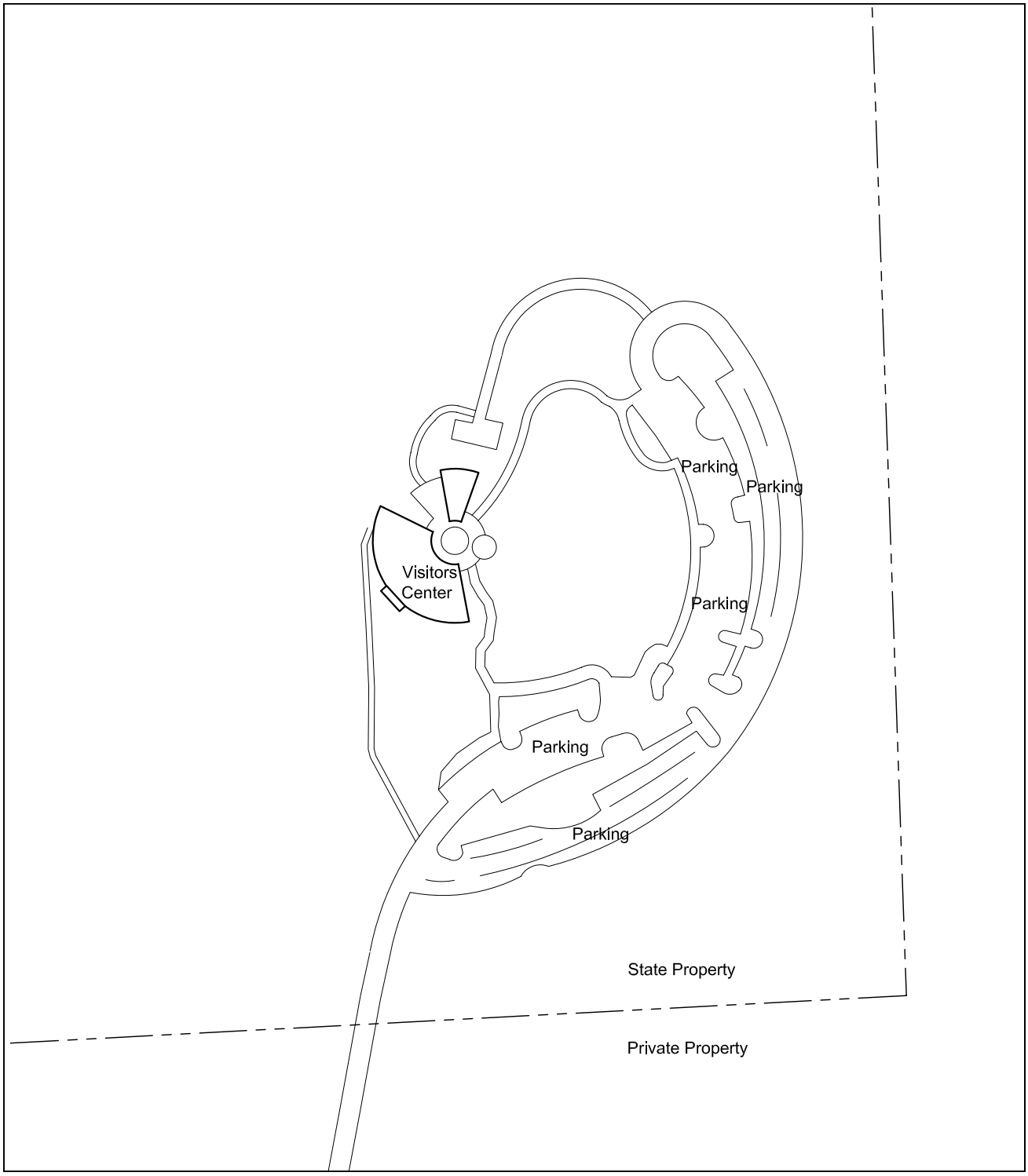
State of California
Department of Water Resources

Figure # LO-11
Oroville Dam Overlook Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Future facility functions to be addressed in the I&E Program of the RMP.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
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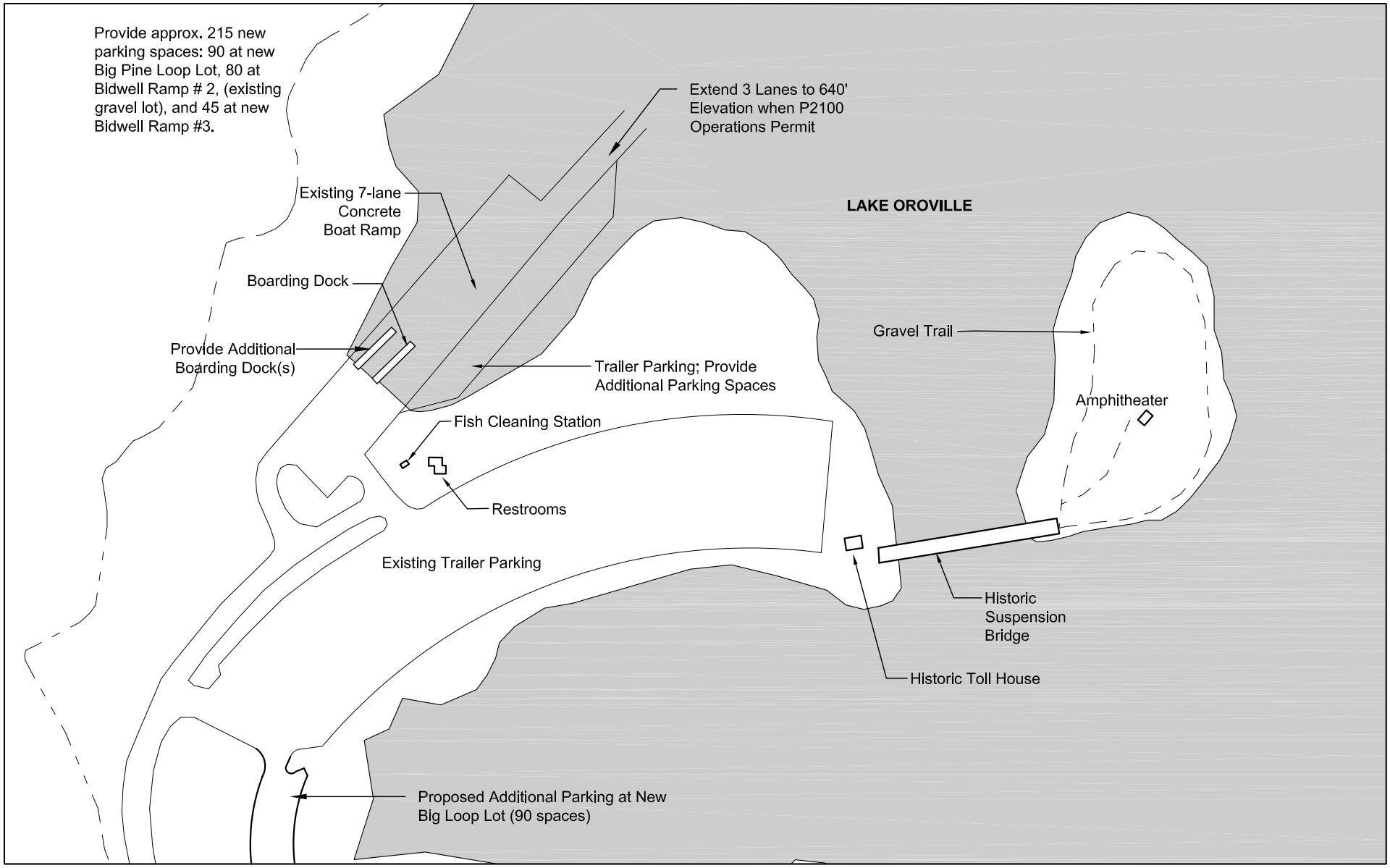
Figure # LO-12
Lake Oroville Visitors Center



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide approximately 215 new parking spaces for use by BR/DUA/Marina visitors.
-- Provide 2 additional boarding dock(s).
-- Extend 3-lanes on south side of existing Ramp #3 to 640' elevation; provide 45 parking spaces at top of Ramp #3 with other parking along ramp.
-- Resurface existing gravel parking lot with concrete (at 700' elevation and Ramp #2) to provide 80 spaces.
-- Ensure adequate adjustment of the boarding dock(s) as needed and adequate debris removal at boat ramps and adjacent facilities.
-- Provide boaters with information on substitute boating facilities and changing access conditions.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
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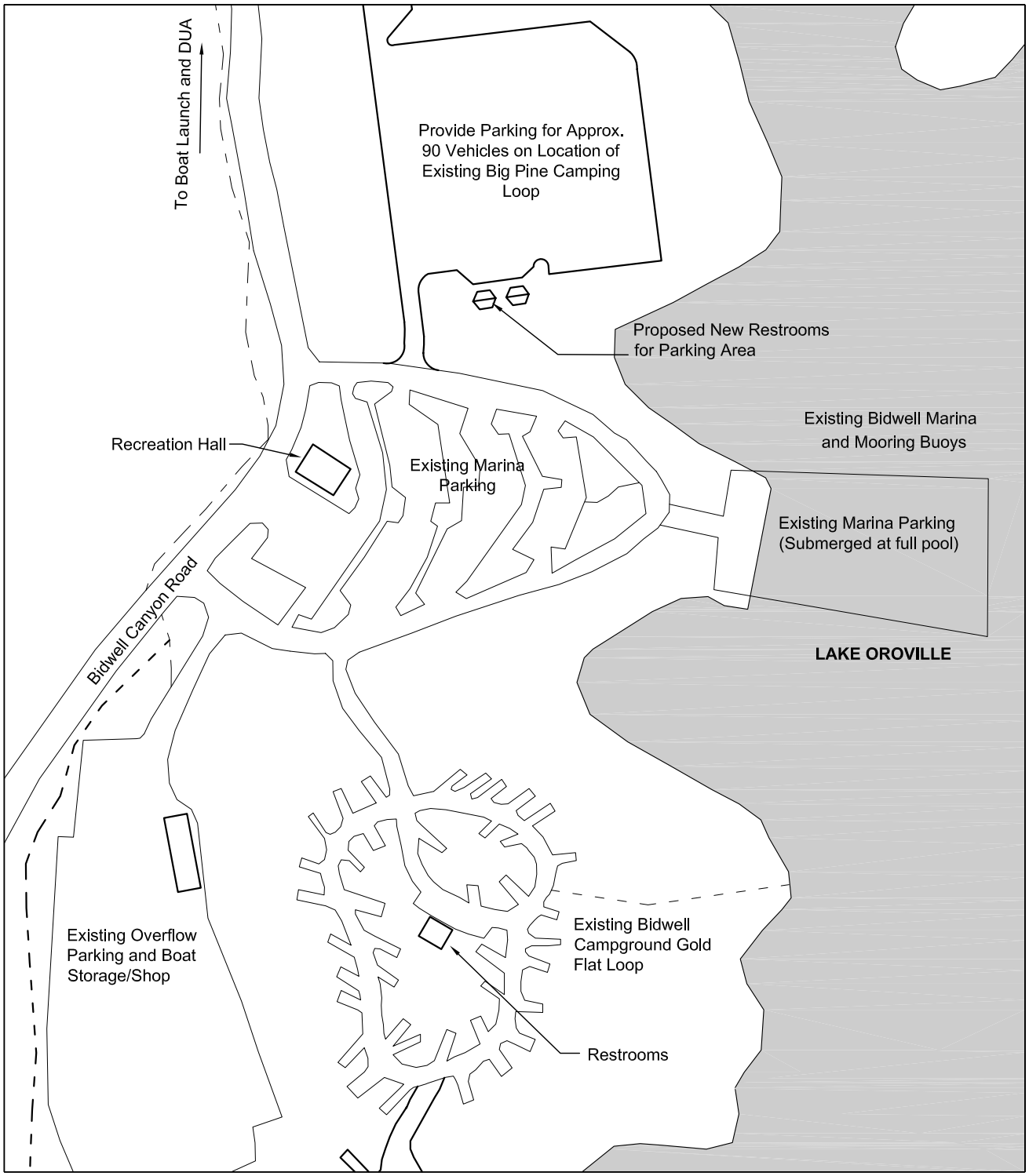
Figure # LO-13
Bidwell Canyon Boat Ramp and Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Relocate the Big Pine Camping Loop to accommodate marina parking needs; provide new campground loop to the south of Gold Flat Loop.
-- Consider upgrades to ADA-accessibility at the marina.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
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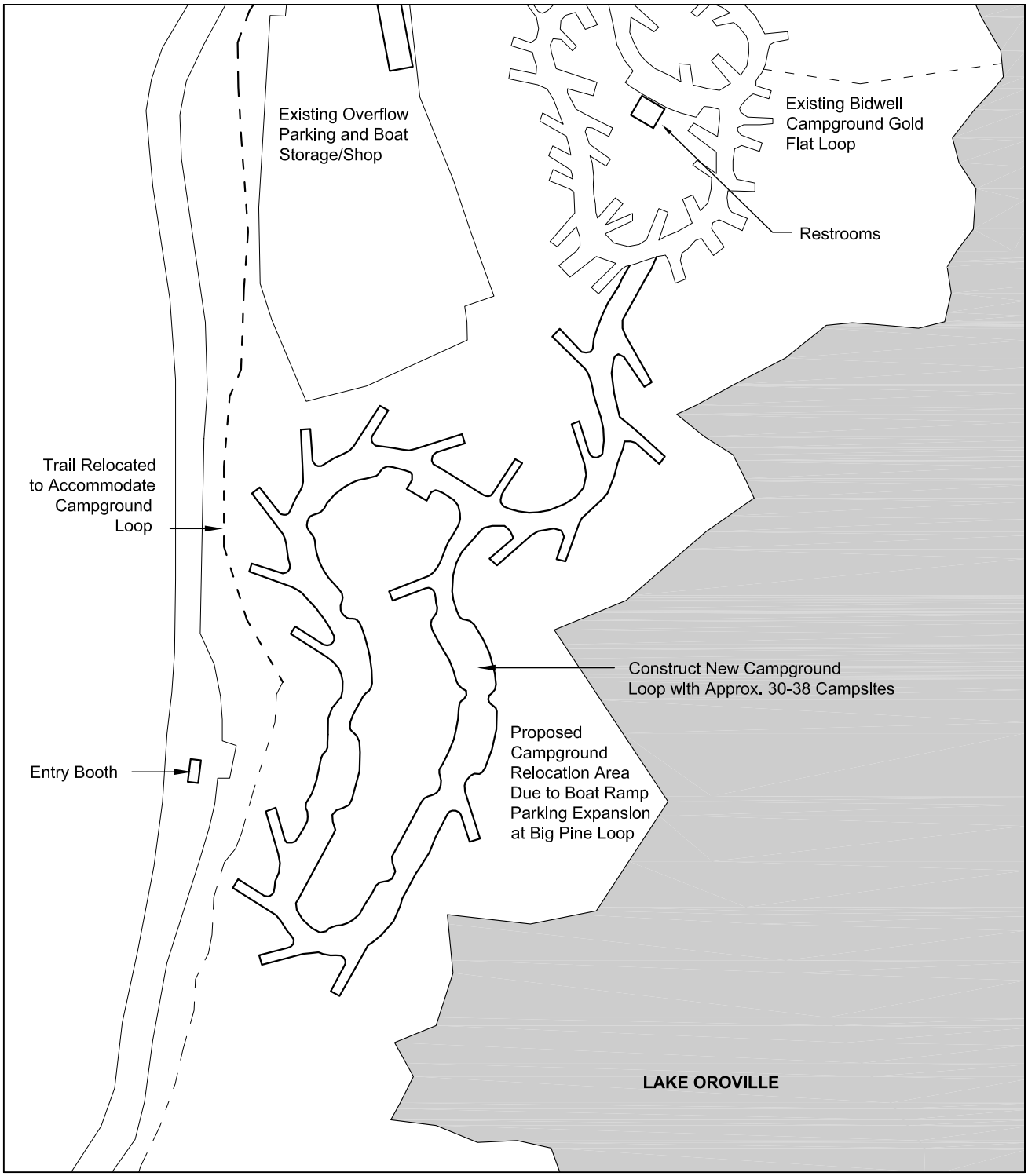
Figure # LO-14
Bidwell Canyon Campground and Marina



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide approx. 30-38 new campsites at new campground loop south of Gold Flat Loop.
-- Provide 15 additional campsites at Loafer Creek Campground if 38 campsites cannot be sited at the New Bidwell Campground Loop.
-- Relocate existing trail to accommodate New Bidwell Campground Loop.

North 0' 100' 200' 400'

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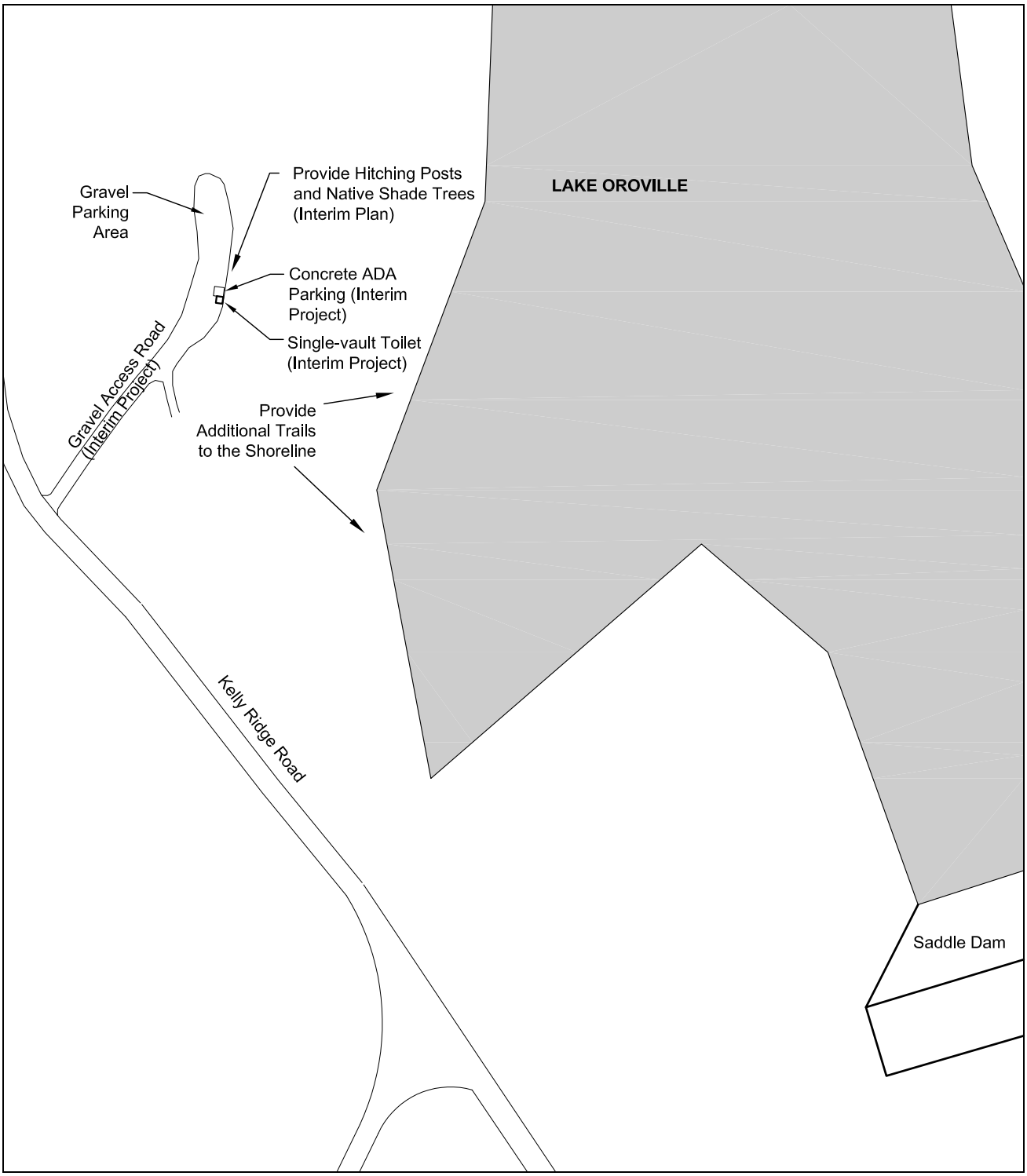
Department of Water Resources

Figure # LO-15
Bidwell Canyon South Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Re-grade and gravel existing equestrian parking area (Interim Project).
-- Provide hitching posts (Interim Project), and native shade trees (Interim Project).
-- Construct additional trails to the shoreline from the trailhead.
-- Install new vault toilet (Interim Project).

North 0' 100' 200' 400'

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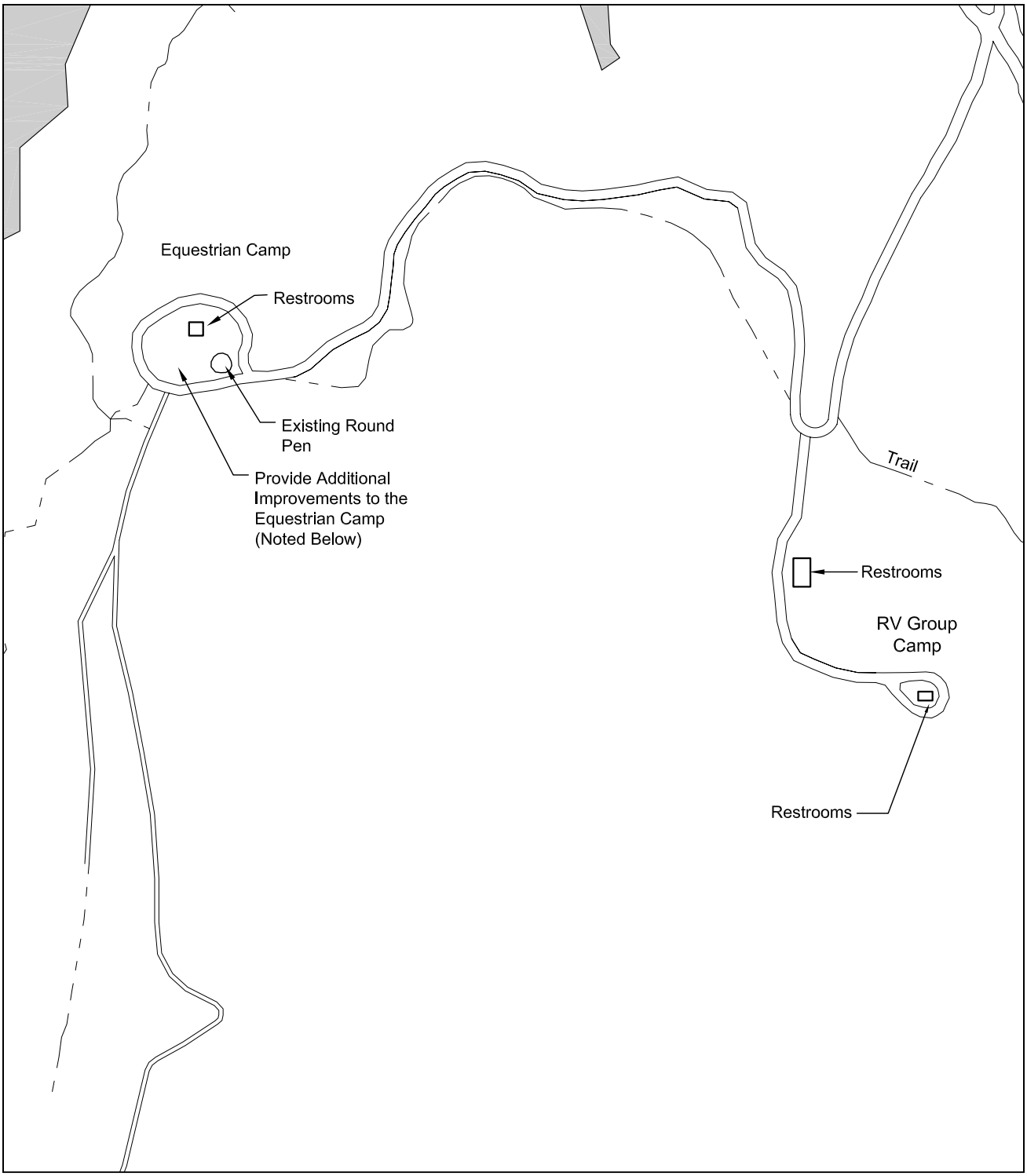
Department of Water Resources

Figure # LO-16
Saddle Dam Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide ADA-accessibility enhancements at the Loafer Creek Group and Equestrian Campgrounds.
-- Provide 2 new group RV campsites in the Loafer Creek Complex.
-- Construct equestrian-related improvements including paved access road, feeder boxes and 50' round pen.
-- Replace the portable toilet at Brooks Orchard located nearby with a new vault toilet building.
-- Based on monitoring results during the L2 to L5 phases, additional group RV campsites may be needed. If so, construct 1-2 new group RV campsites in the Loafer Creek Complex utilizing existing infrastructure where possible.

North 0' 200' 400' 800'

Oroville Facilities Relicensing
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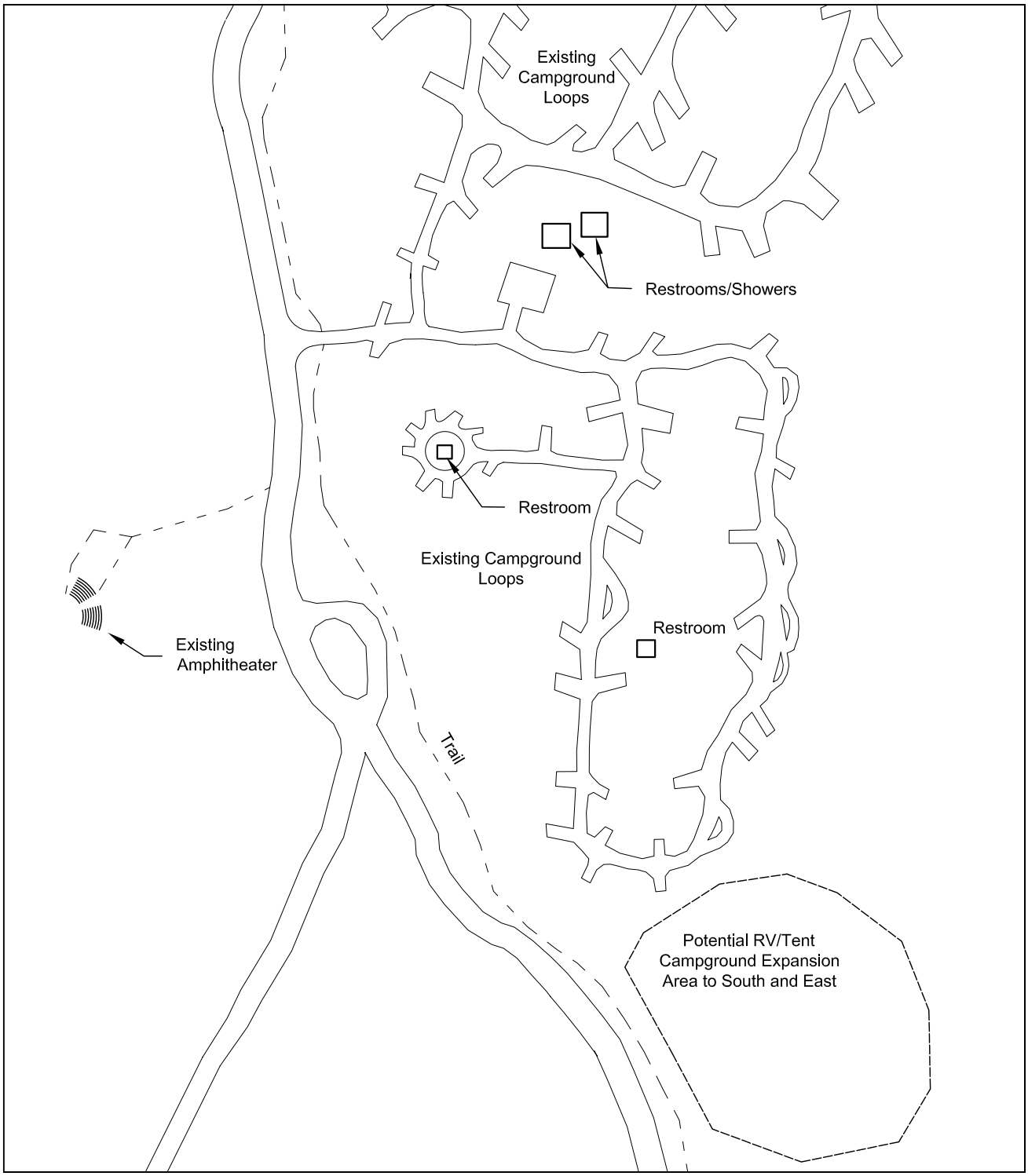
State of California
Department of Water Resources

Figure # LO-17
Loafer Creek Group Camp and Equestrian Camp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide 15 new RV/tent campsites in the Loafer Creek Complex if 38 campsites cannot be relocated within the Bidwell Canyon Complex.

-- Based on monitoring results during the L2 to L5 phases, additional camping capacity may be needed. If so, provide approximately 35 (if 15 from Bidwell Canyon Campground have previously been constructed) to 50 new RV/tent campsites within the Loafer Creek Complex, and reevaluate the current mix of campsite types (RV vs. tent).

North

0' 100' 200' 400'

Oroville Facilities Relicensing
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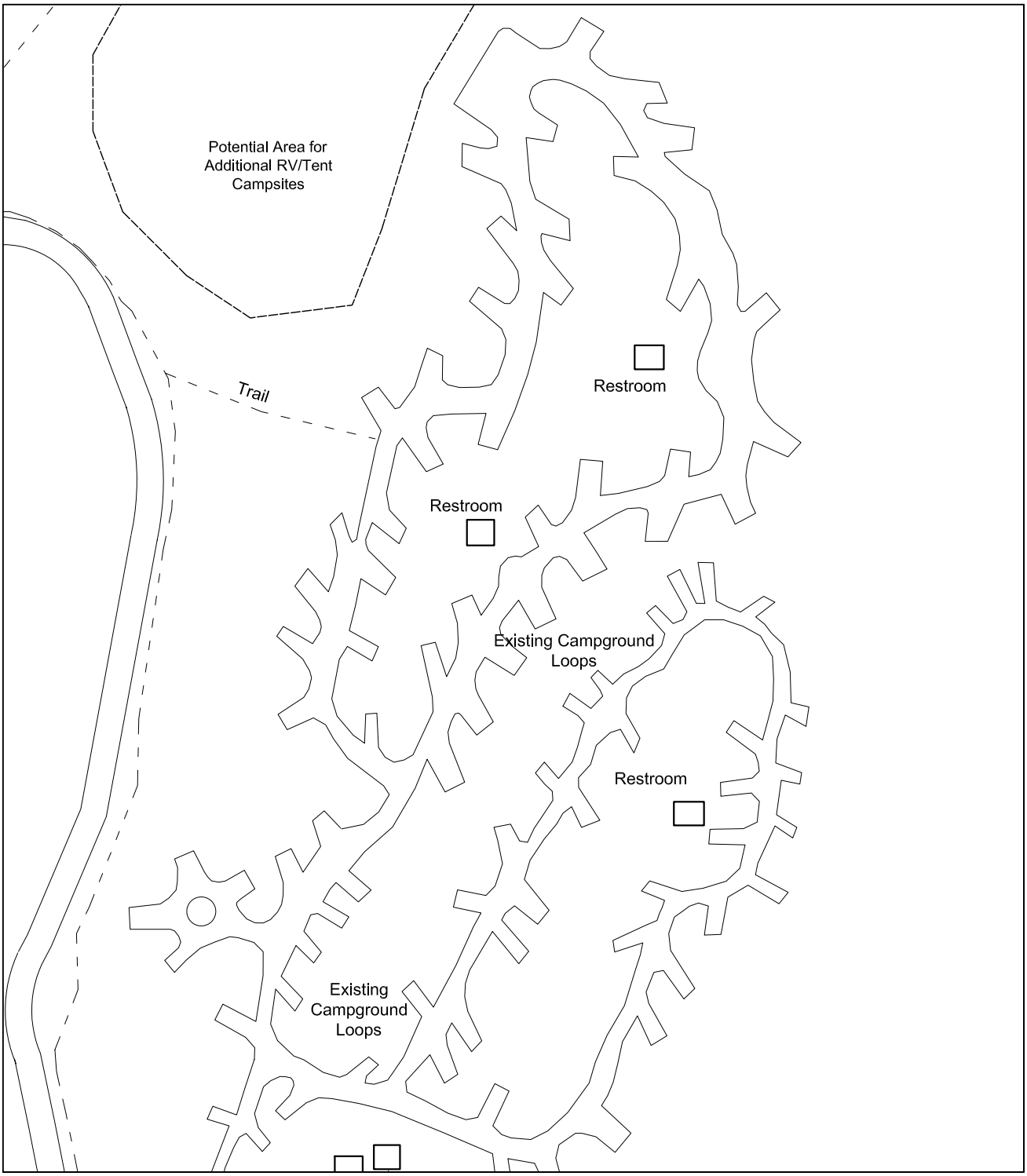
State of California
Department of Water Resources

Figure # LO-18
Loafer Creek Campground -- South Loop



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide 15 new RV/tent campsites in the Loafer Creek Complex if 38 campsites cannot be relocated within the Bidwell Canyon Complex.

-- Based on monitoring results during the L2 to L5 phases, additional camping capacity may be needed. If so, provide approximately 35 (if 15 from Bidwell Canyon Campground have previously been constructed) to 50 new RV/tent campsites within the Loafer Creek Complex, and reevaluate the current mix of campsite types (RV vs. tent).

North

0' 100' 200' 200'

Oroville Facilities Relicensing
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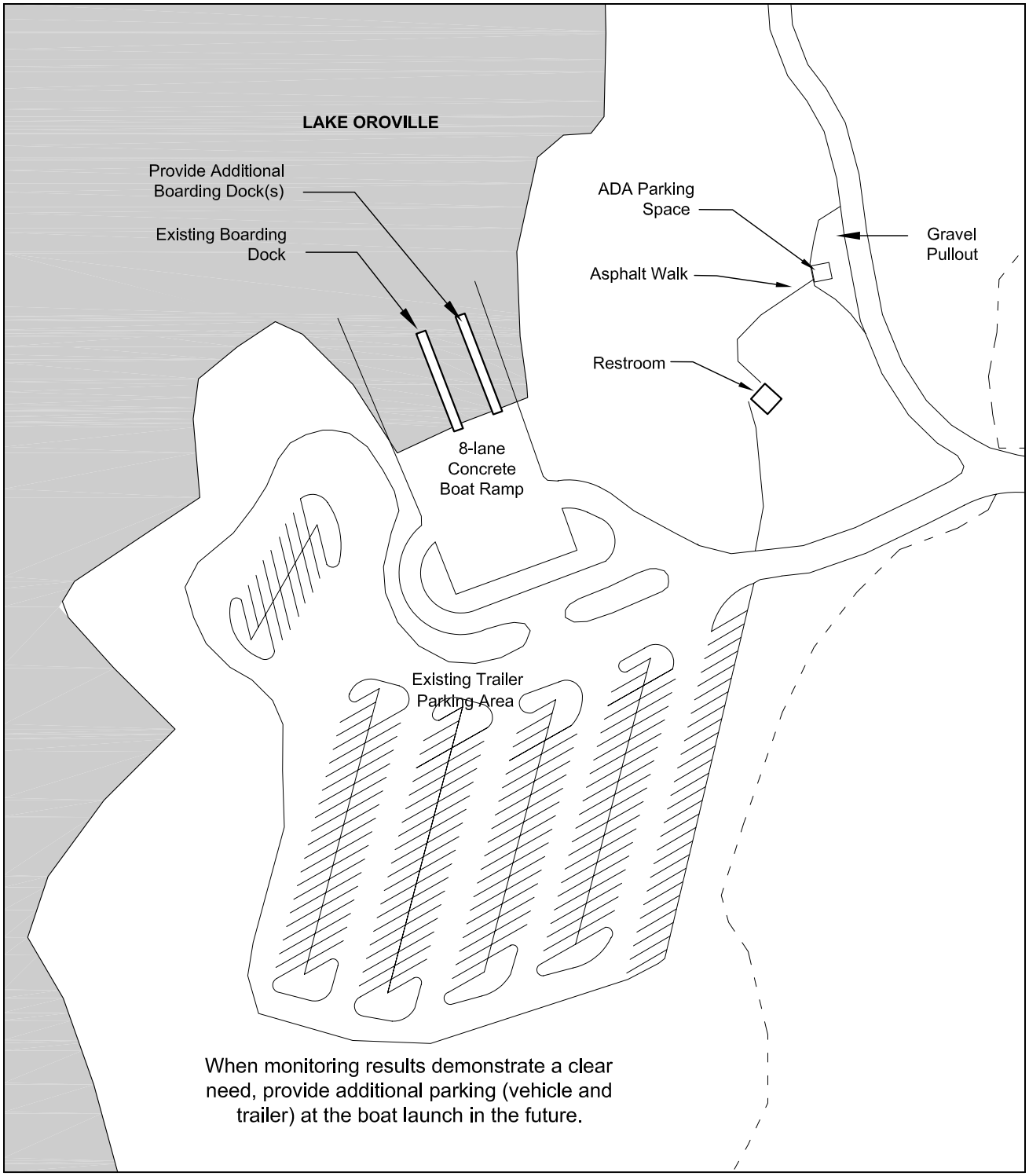
State of California
Department of Water Resources

Figure # LO-19
Loafer Creek Campground -- North Loops



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide 1 or 2 additional boarding docks.
-- Ensure adequate adjustment of the boarding docks and adequate debris removal at boat ramps and adjacent facilities.
-- Provide boaters with additional information about substitute boating facilities and changing reservoir conditions.
-- Provide a fish cleaning station (assuming that this new facility can be connected to an existing septic system).
-- Base on monitoring results during the L2 to L5 phases, additional lower pool elevation launching capacity may be needed. If so, provide car-top boat launching capability to 750' msl. An existing gravel road in the Loafer Creek Complex leading down to 750' msl may be considered for this need.
-- Base on monitoring results during the L2 to L5 phases, additional boat ramp parking capacity may be needed. If so, additional parking may be provided at the boat ramp.

North 0' 75' 150' 300'

Oroville Facilities Relicensing
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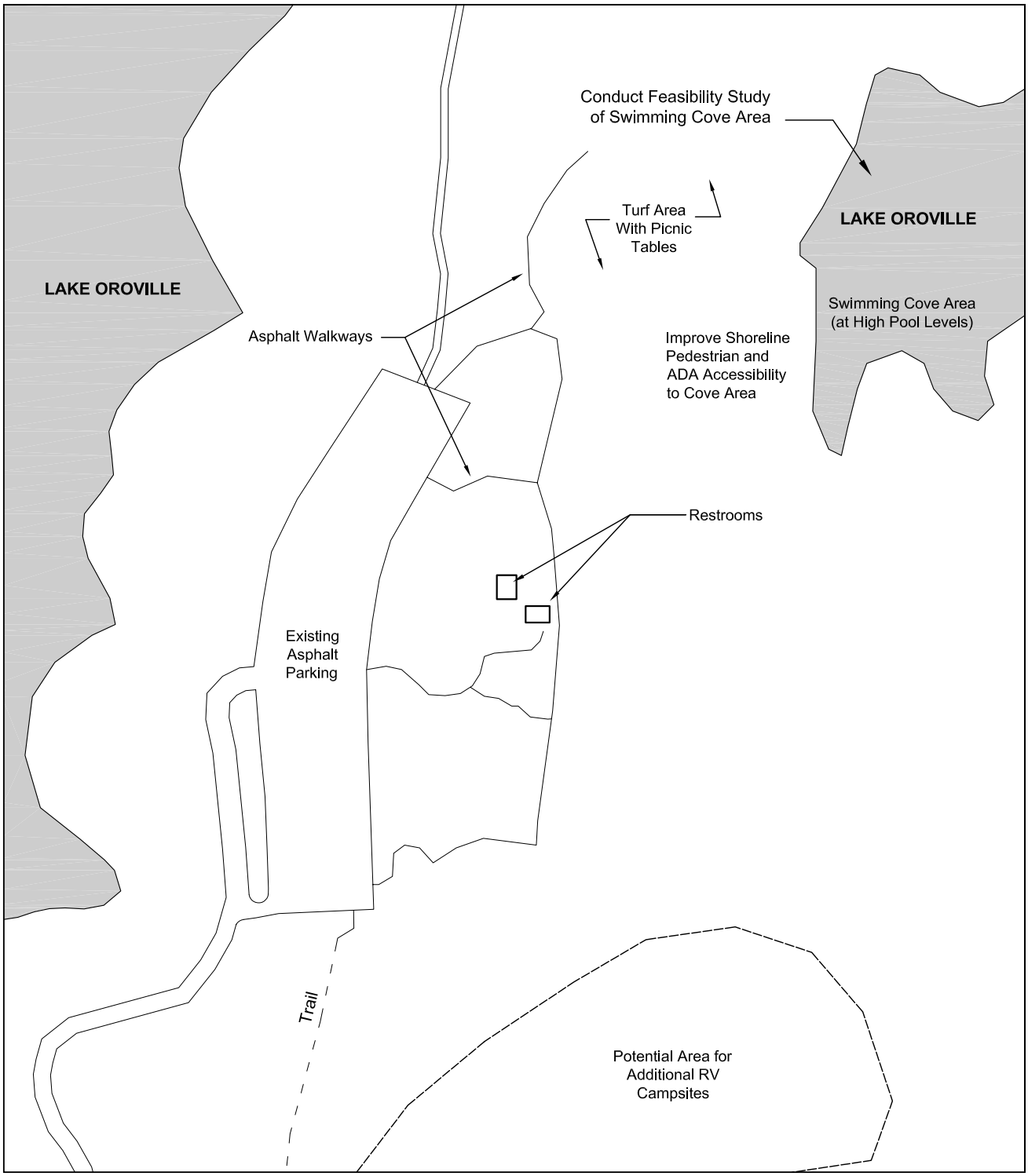
Figure # LO-20
Loafer Creek Boat Launch



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Conduct a feasibility study of potential swim facility options to provide improved swimming opportunities at Loafer Creek DUA and/or other P-2100 sites. If this site is feasible, construct a new swim facility at this location.
-- Provide improved shoreline access and ADA-accessibility to the day use area, swimming beach, and cove.

North 0' 100' 200' 400'

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State of California
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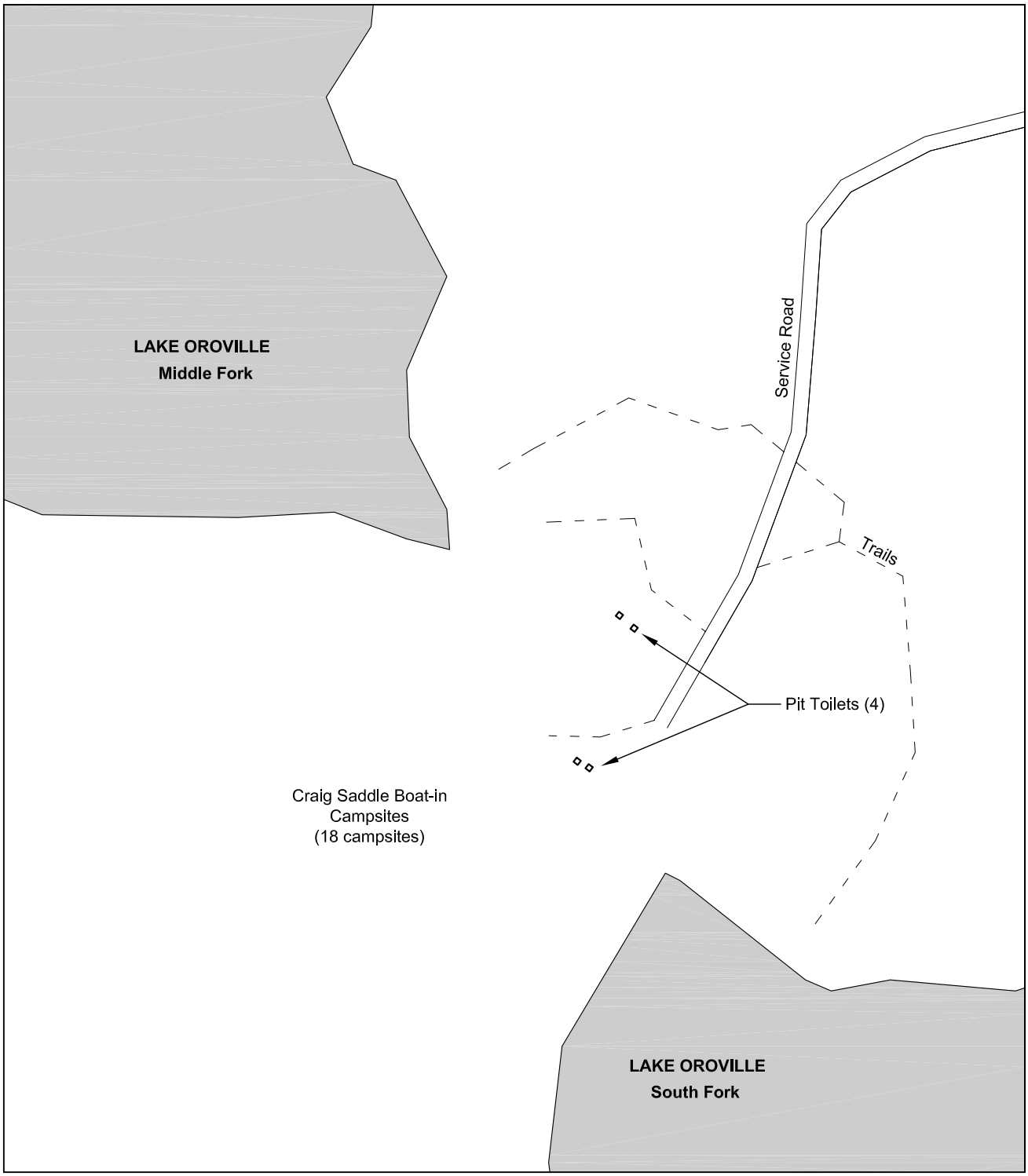
Figure # LO-21
Loafer Creek Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Monitor use and conduct regular O&M activities to ensure cultural resource protection in concert with ongoing recreational use.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
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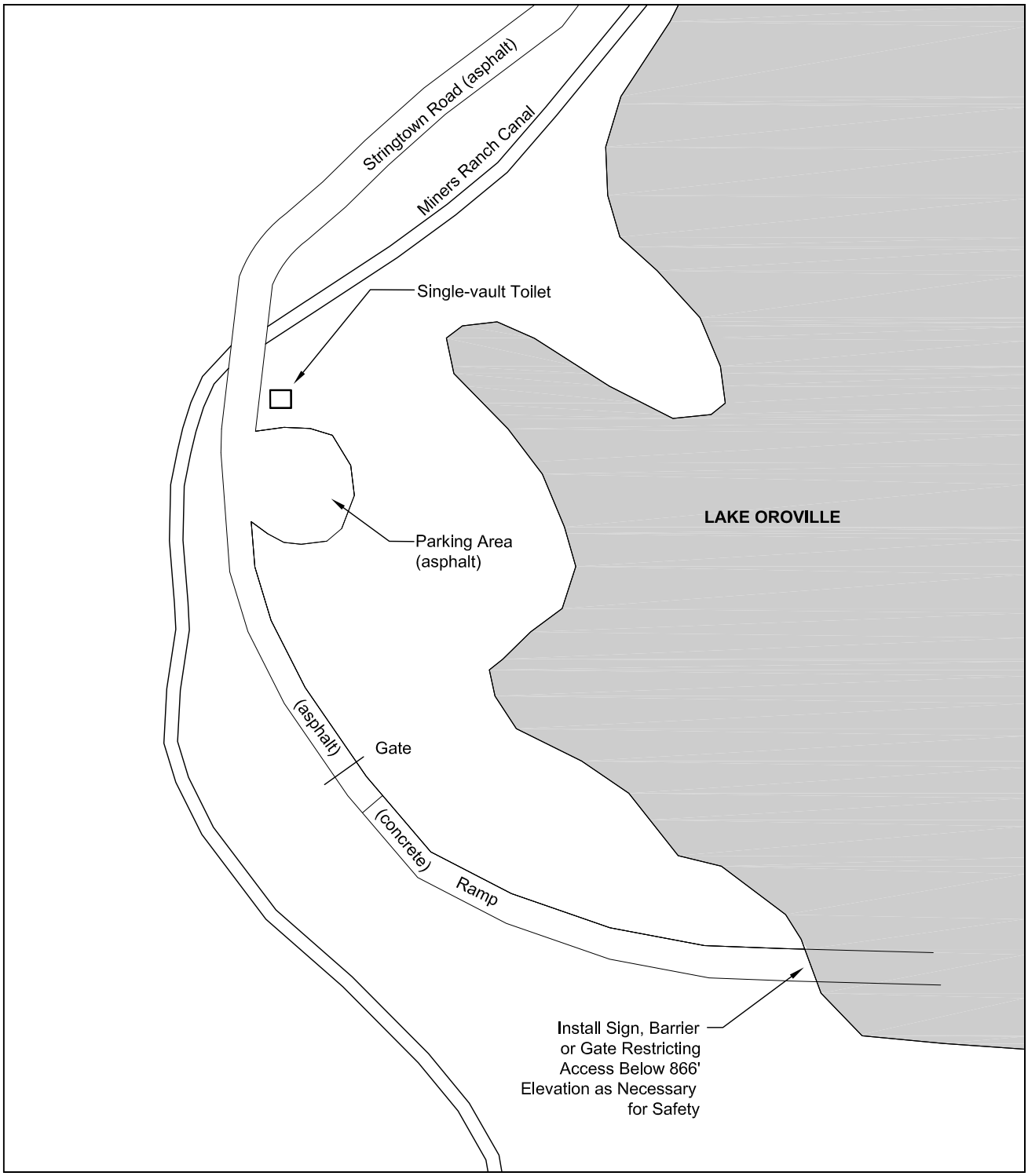
Figure # LO-22
Craig Saddle Boat-in Campground



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide additional roadside directional signs (as a component of a proposed I&E Program) to aid users in locating this site.
-- Install a sign, barrier, or gate for safety purposes at the unmaintained old road bed in the inundation zone.

North 0' 50' 100' 200'

Oroville Facilities Relicensing
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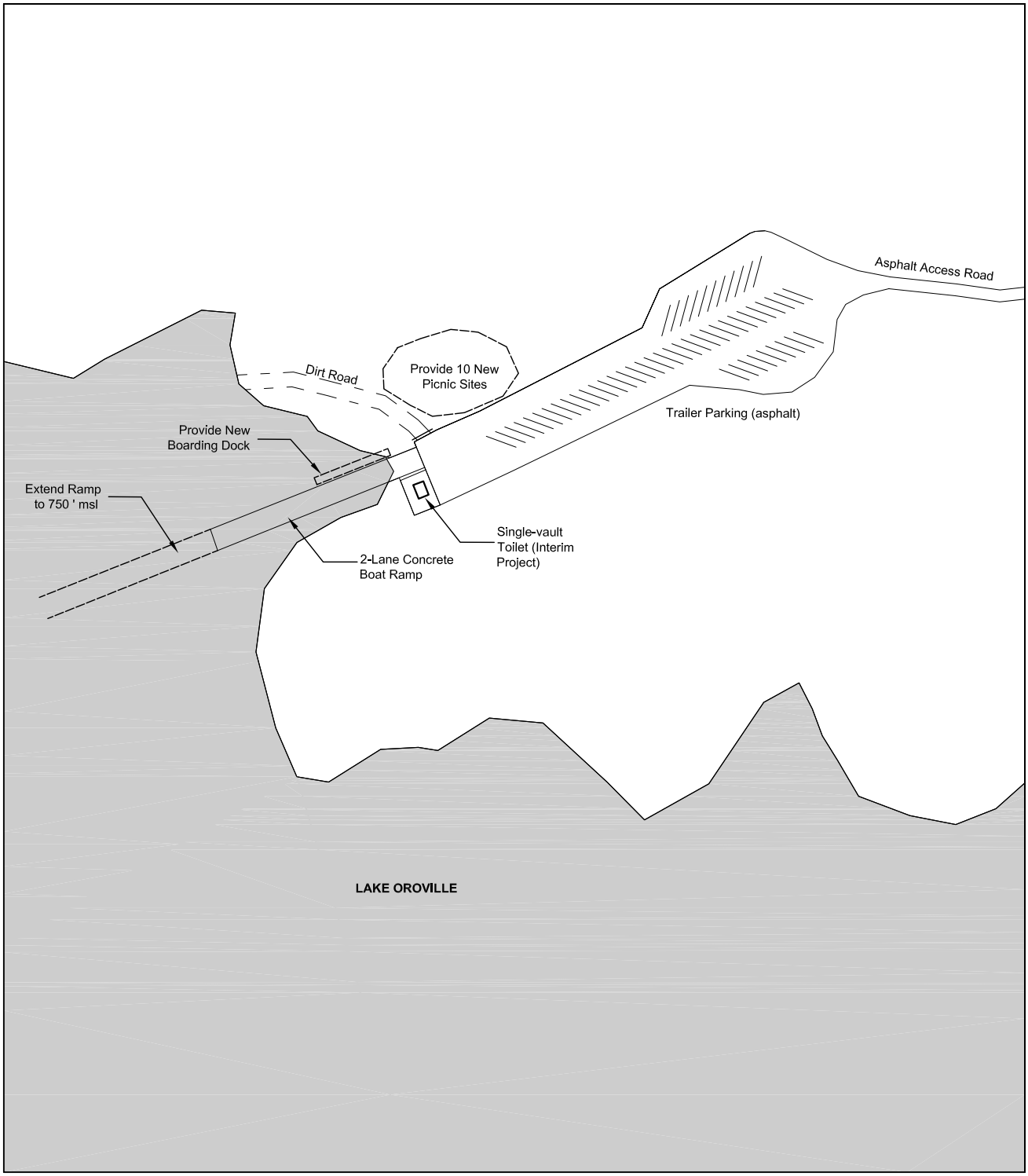
Department of Water Resources

Figure # LO-23
Stringtown Car-top Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Construct 10 family picnic sites.
-- Extend the boat ramp to approx. 750 feet msl to provide a greater likelihood of full summer-season usability.
-- Provide a boarding dock at the boat ramp.
-- Provide a vault toilet (Interim Project).
-- Ensure adequate adjustment of boarding dock.

North 0' 100' 200' 400'

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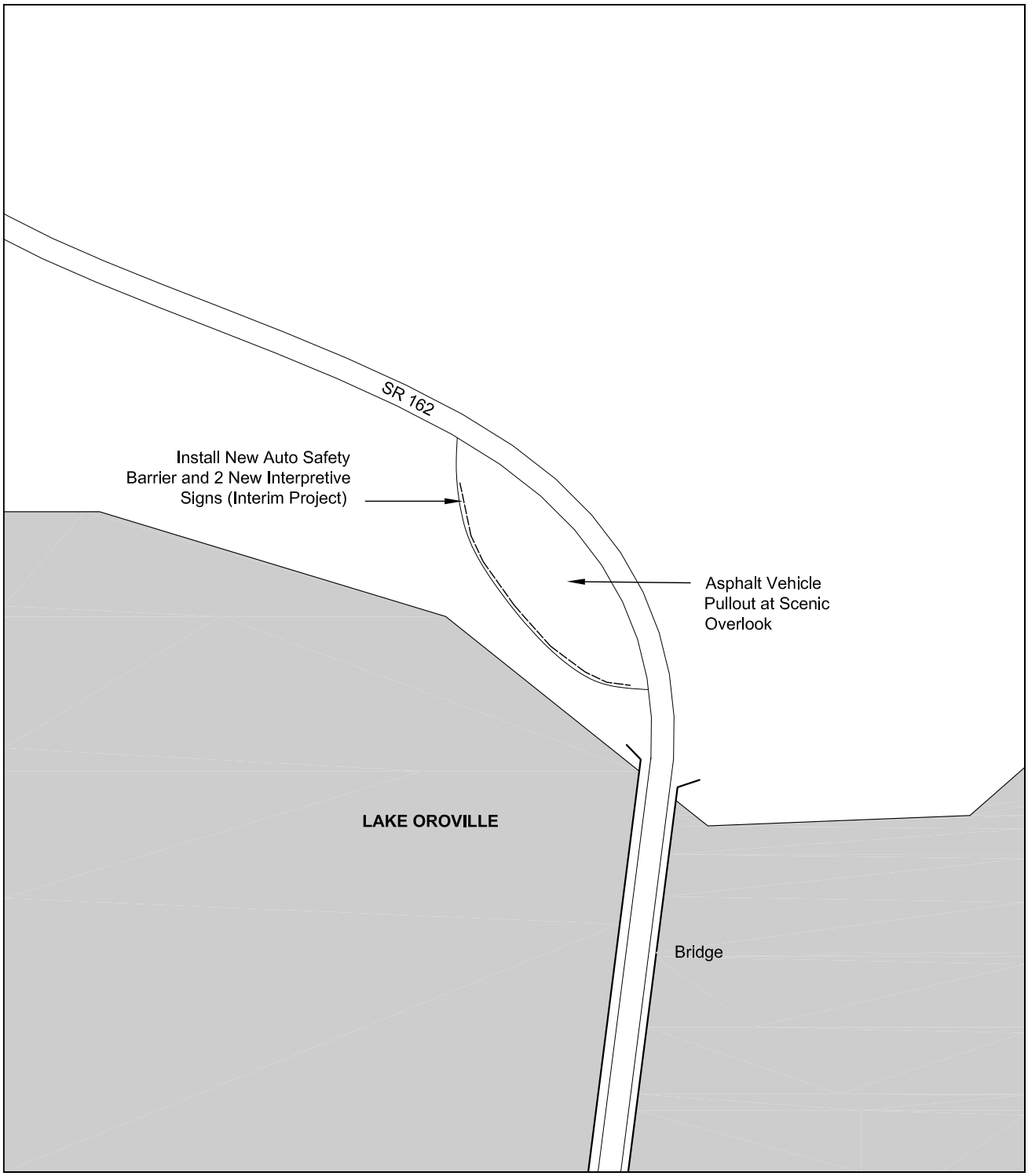
Figure # LO-24
Enterprise Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Remove cyclone-style fence and replace with Caltrans-approved auto safety barrier (Interim Project)
-- Provide new interpretive signs (Interim Project)

North 0' 100' 200' 400'

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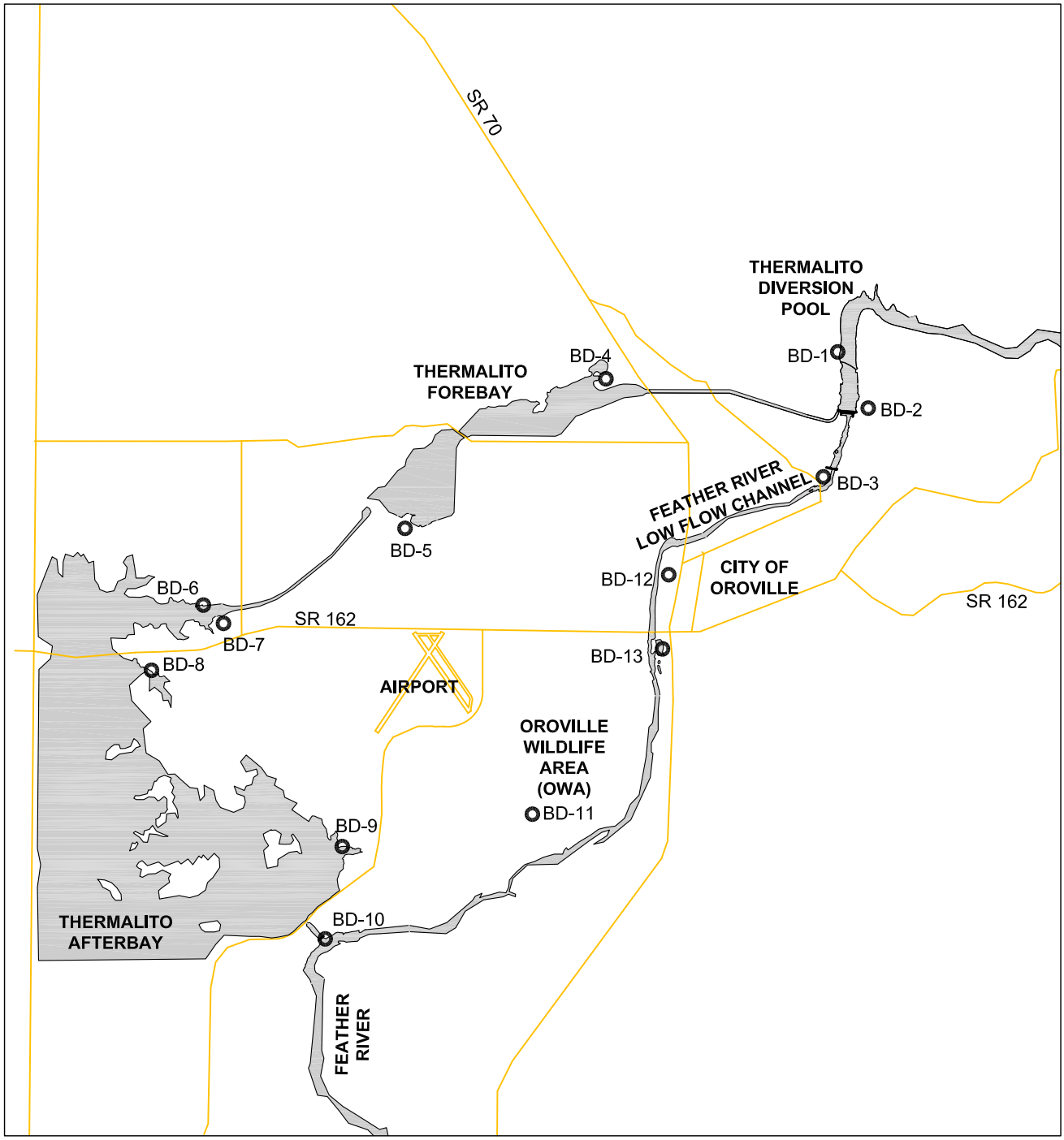
State of California
Department of Water Resources

Figure # LO-25
(SR 162) Lake Oroville Scenic Overlook



SOURCE: EDAW Inc., 2003

Below Dam (BD) Recreation Sites:

BD-1 Diversion Pool DUA (North)
BD-2 Lakeland Blvd Trail Access/ Diversion Pool DUA (South)
BD-3 Fish Hatchery DUA
BD-4 North Forebay DUA and Boat Ramp
BD-5 South Forebay DUA and Boat Ramp
BD-6 Model Aircraft Flying Facility
BD-7 Wilbur Road Boat Ramp
BD-8 Monument Hill DUA and Boat Ramp
BD-9 Larkin Road Car-top Boat Ramp
BD-10 Afterbay Outlet Camping and DUA's
BD-11 Oroville Wildlife Area (OWA)

North

Not to Scale

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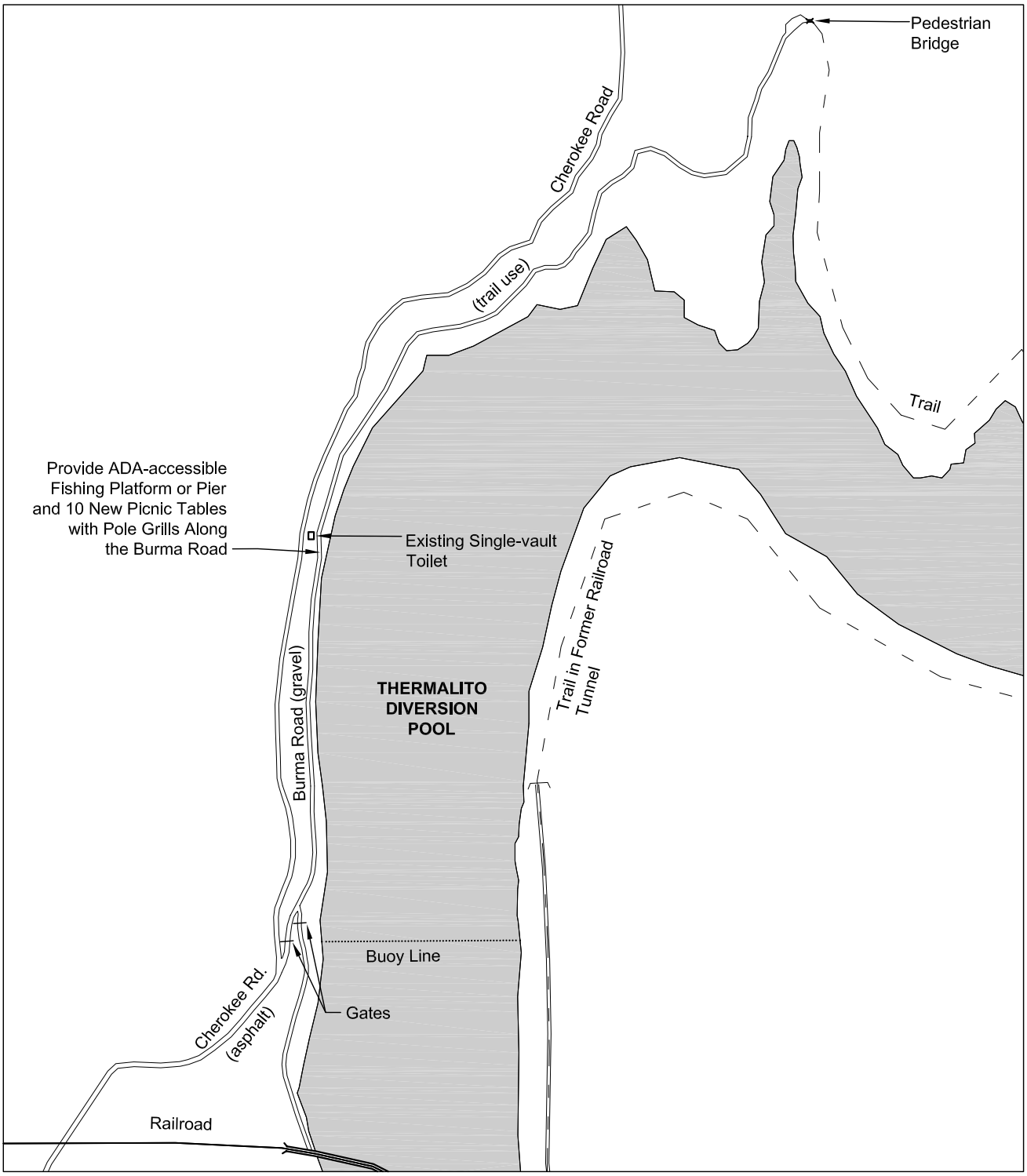
Department of Water Resources

Below Dam Recreation Site Key Map



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Construct additional day use facilities including 10 new picnic tables with pole grills along the Diversion Pool along the Burma Road.
-- Provide an ADA-accessible fishing pier or platform along the Burma Road.

North 0' 300' 600' 1,200'

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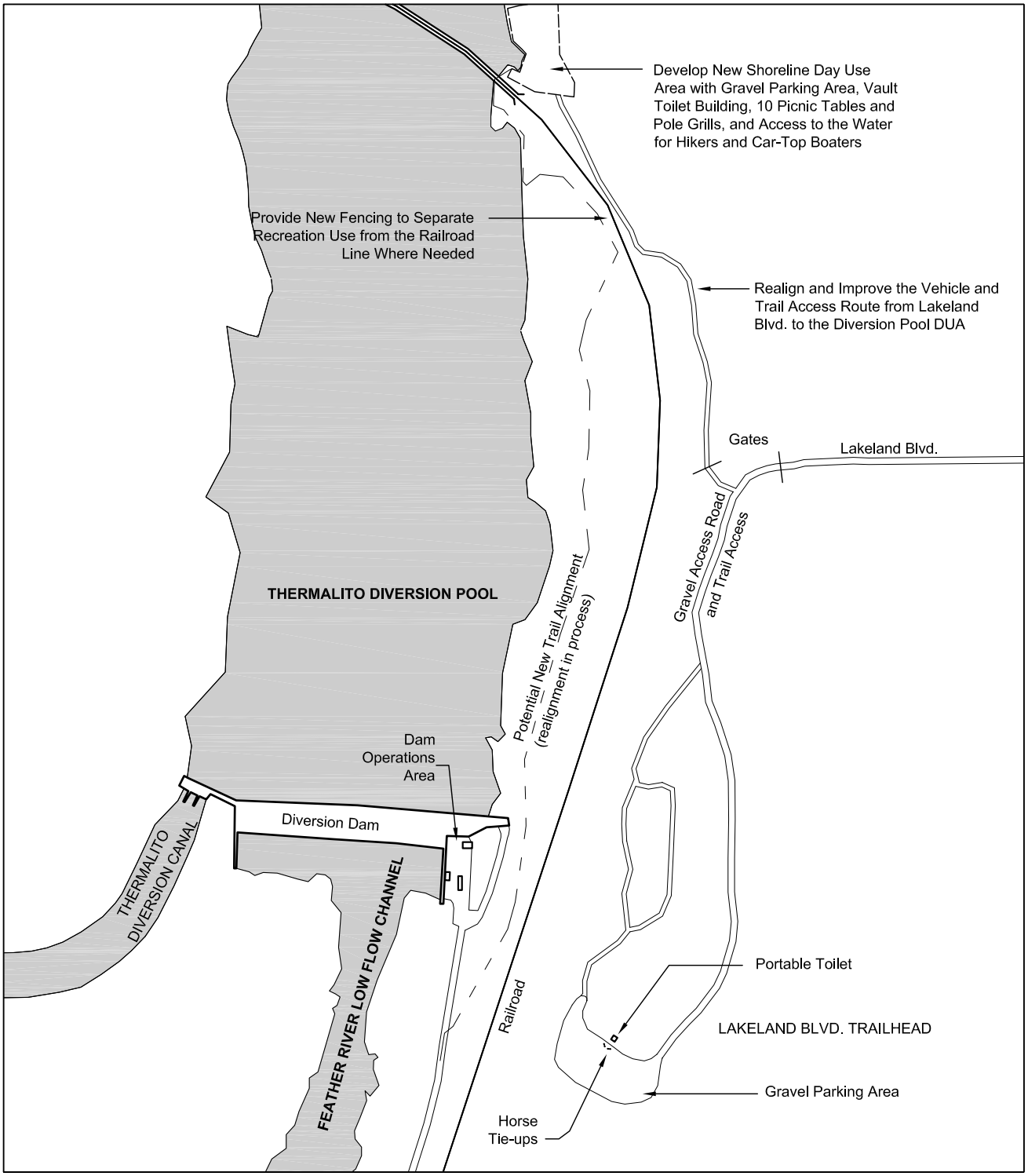
Figure # BD-1
Diversion Pool Day Use Area (North)



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide a new shoreline day use/picnic site with 10 picnic tables and pole grills and a gravel parking area on the southern shoreline of the Diversion Pool for access to the water for hikers and car-top boaters.

-- Realign and improve the road to the new Diversion Pool DUA/Car-top Boat Ramp from Lakeland Blvd.

-- Provide new fencing to separate recreation use from the railroad line where needed.

North 0' 225' 450' 800'

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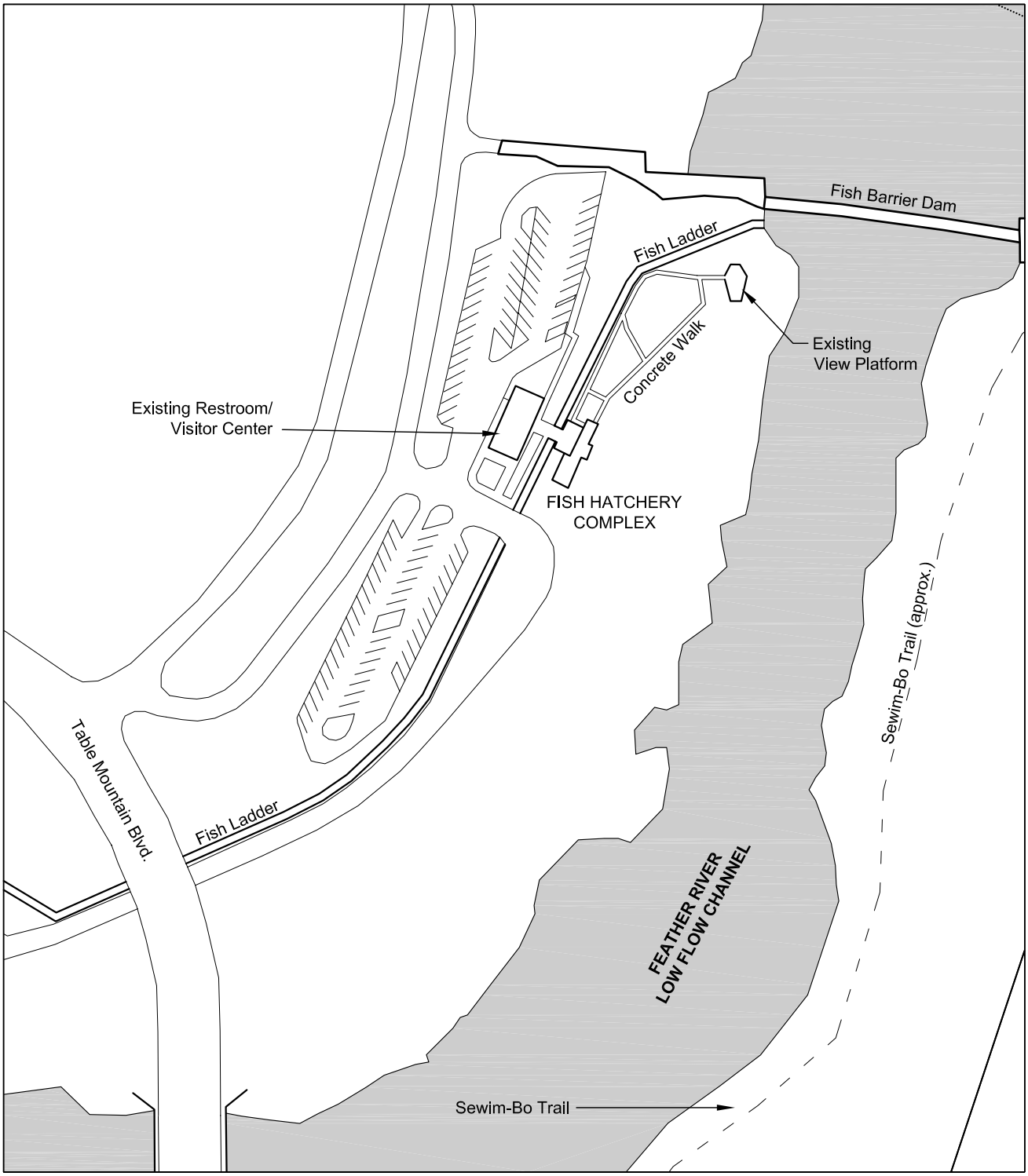
Figure # BD-2
Lakeland Blvd. Trail Access/
Diversion Pool Day Use Area (South)



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Potential I&E-related enhancements would be considered at the Fish Hatchery Visitor Center under the proposed I&E Program of the RMP.

-- As part of the Interim Projects, construct the Sewim-Bo Trail along the eastern bank of the Feather River from the Old Bath House (now Nature Center) extending north to the Diversion Dam with a series of picnic tables, shade ramadas, and interpretive signs (already constructed).

North 0' 75' 150' 300'

Oroville Facilities Relicensing
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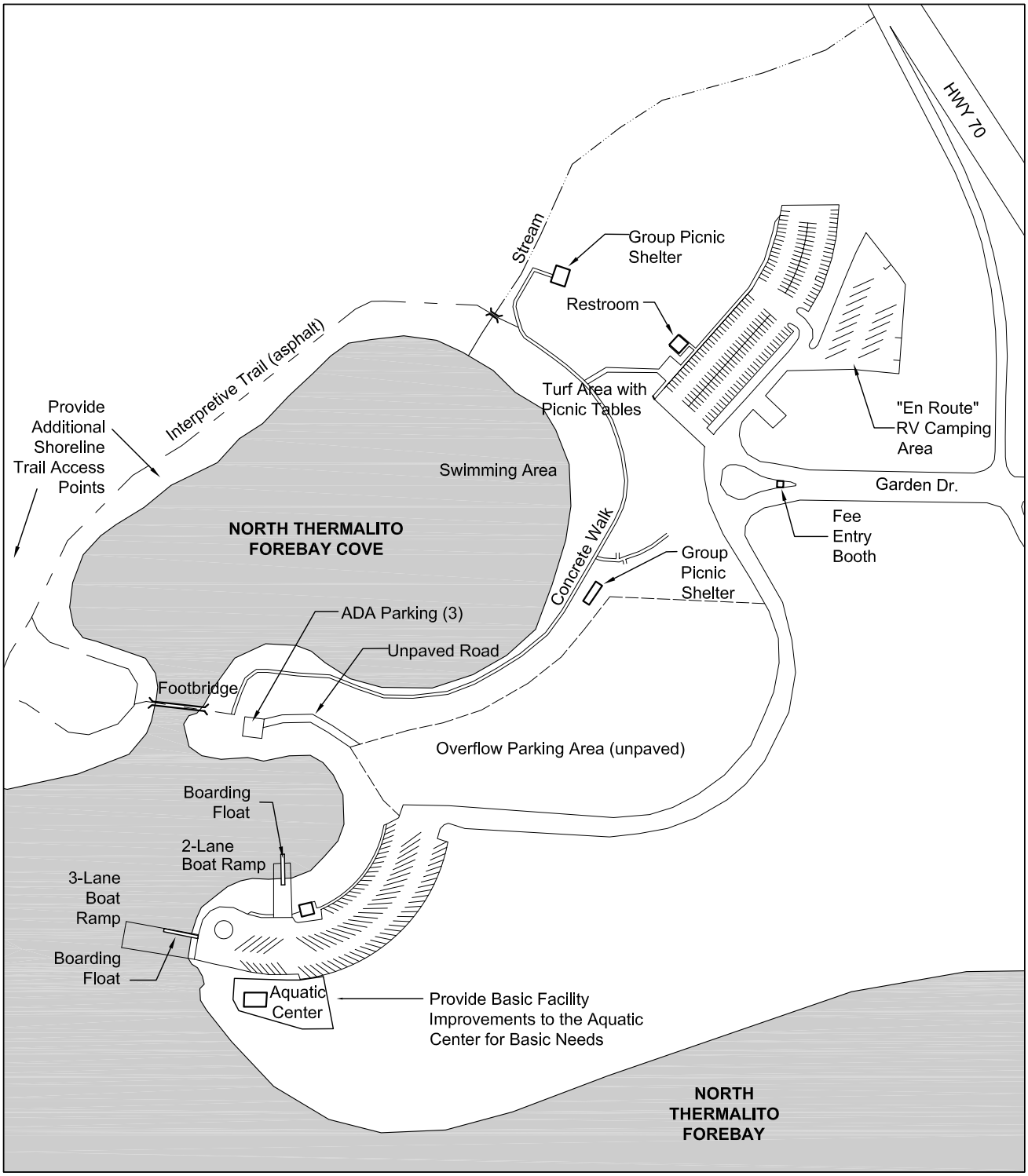
Figure # BD-3
Feather River Fish Hatchery Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Conduct a feasibility study to evaluate warm water swimming options at this site and other P2100 locations.
-- Provide new non-motorized trail opportunities in the Thermalito Forebay area as a component of the expanded trails program.
-- Provide additional shoreline trail access points.
-- Monitor and maintain water quality at the swimming cove.
-- Provide basic facility improvements to the Aquatic Center for basic needs (in progress).
-- Provide a fish cleaning station (assuming new facility can be connected to existing septic system).

North 0' 150' 300' 600'

Oroville Facilities Relicensing
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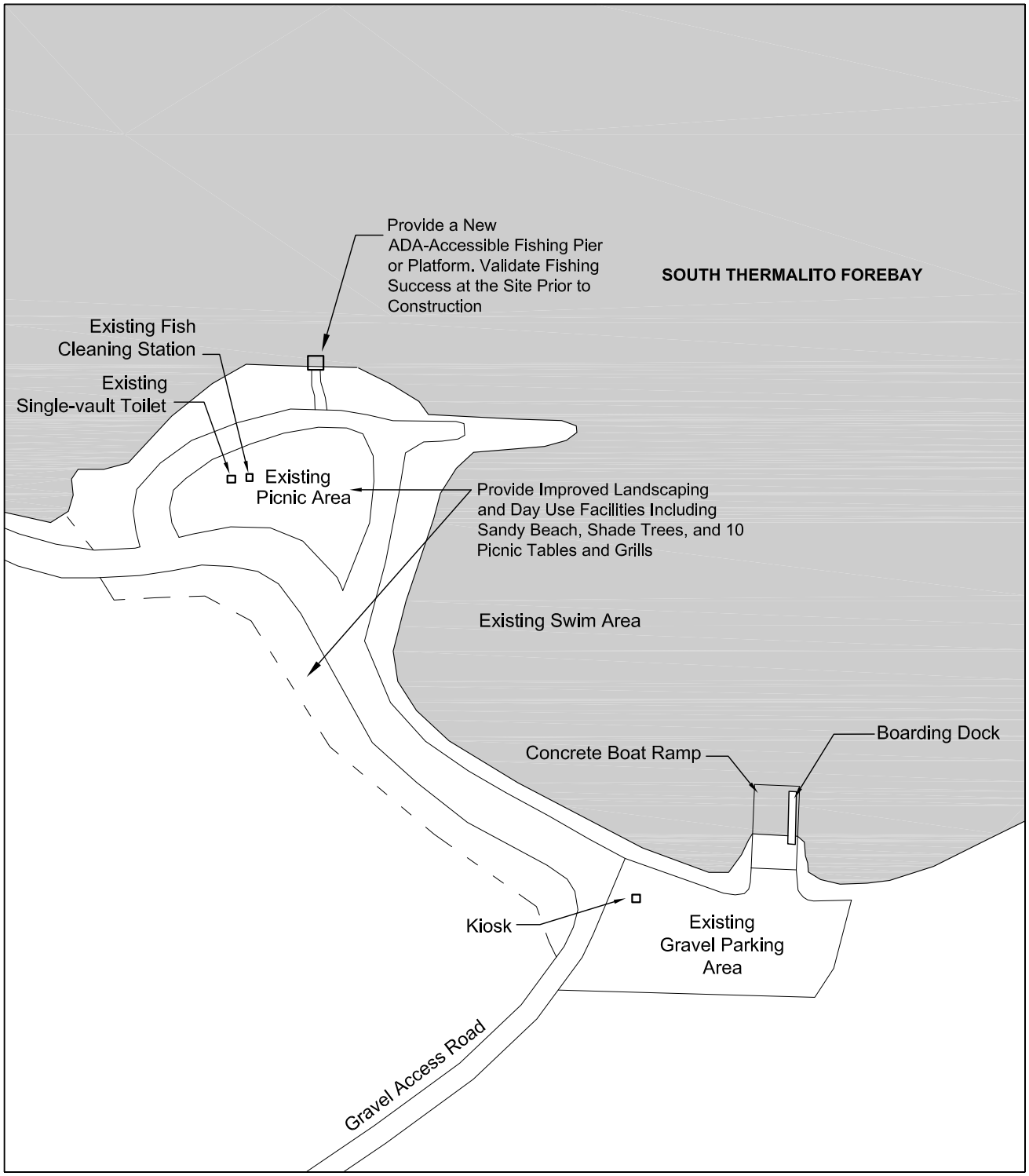
State of California
Department of Water Resources

Figure # BD-4
North Thermalito Forebay Day Use Area and Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Provide an ADA accessible fishing pier or platform.
-- As a component of a proposed Comprehensive Non-Motorized Trails Plan, provide new trail opportunities in the South Thermalito Forebay Area.
-- Provide improved landscaping and day use facilities including sandy beach, 10 picnic tables and grills, and shade trees.
-- Monitor and maintain water quality at the swimming cove.

North 0' 100' 200' 400'

Oroville Facilities Relicensing
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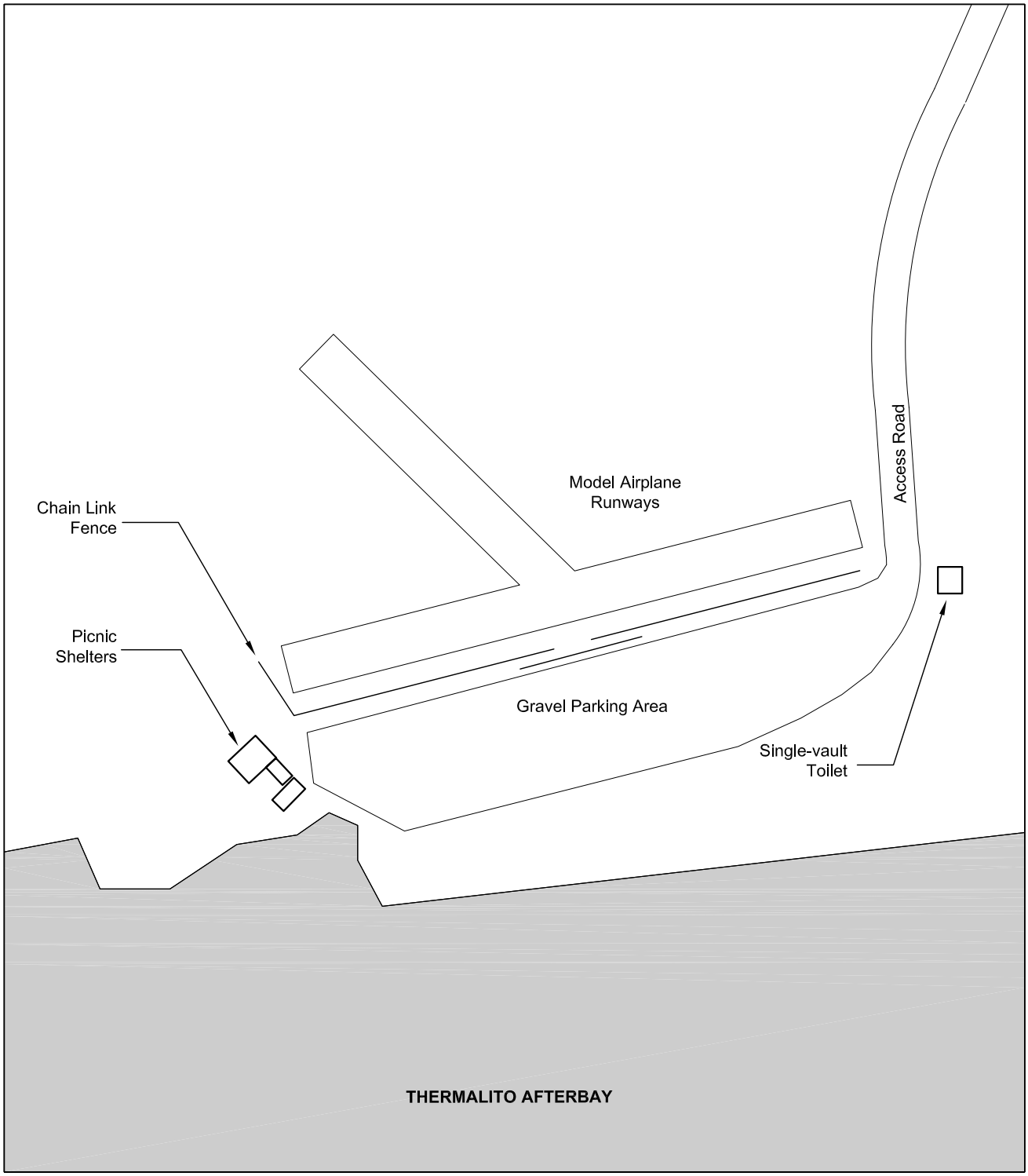
State of California
Department of Water Resources

Figure # BD-5
South Thermalito Forebay Boat Ramp and Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- As part of the Interim Project package, provide new paving at the Crossing Runways, regrade and regravel the parking lot, install aircraft staging tables, install picnic tables with shade ramadas, interpretive/information bulletin board, and install a new single-vault toilet building (completed).

North 0' 50' 100' 200'

Oroville Facilities Relicensing
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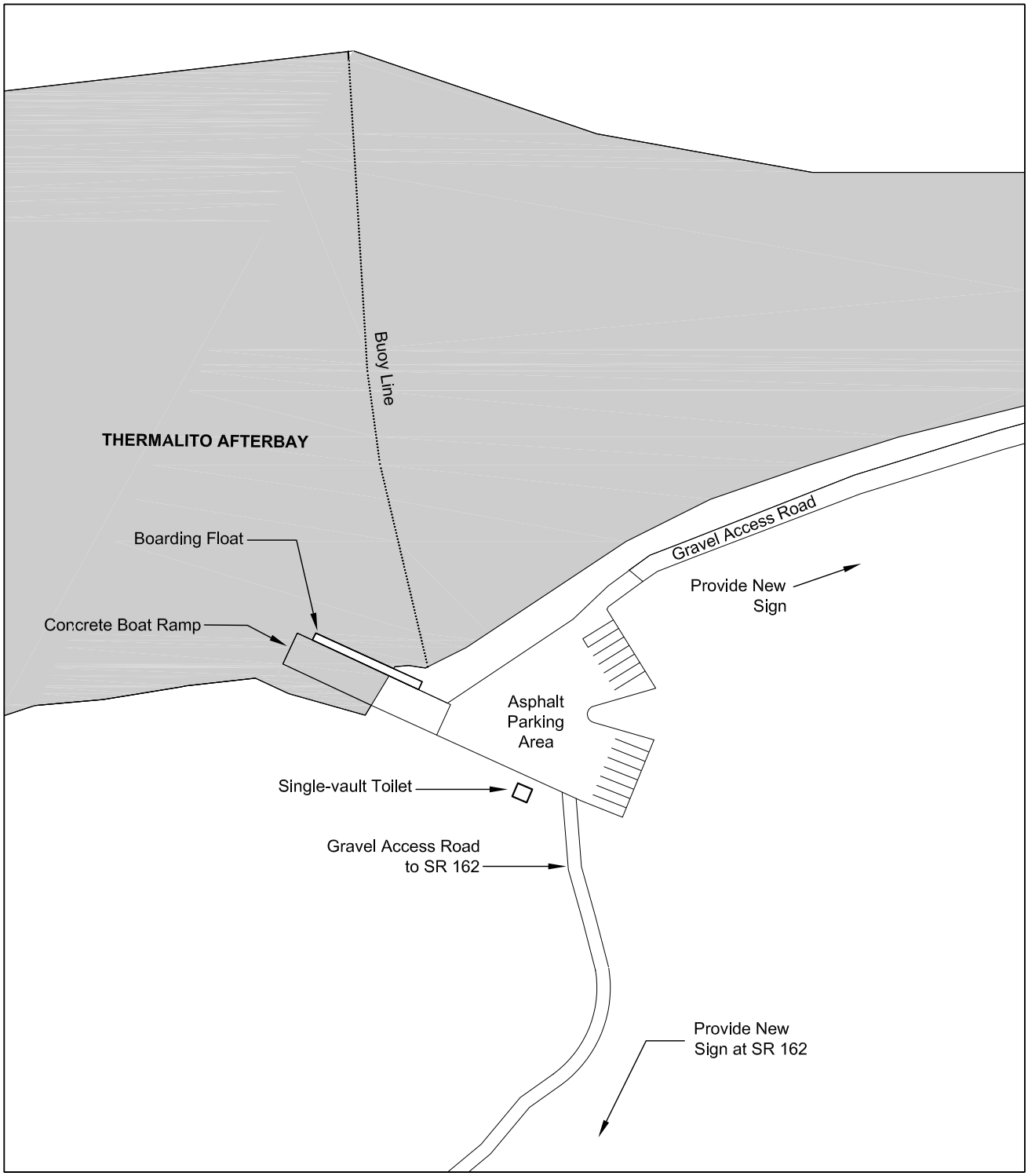
Figure # BD-6
Model Aircraft Flying Facility



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- As a component of the I&E Program, provide new directional signs for easier locating of the site by the public.

North 0' 75' 150' 300'

Oroville Facilities Relicensing
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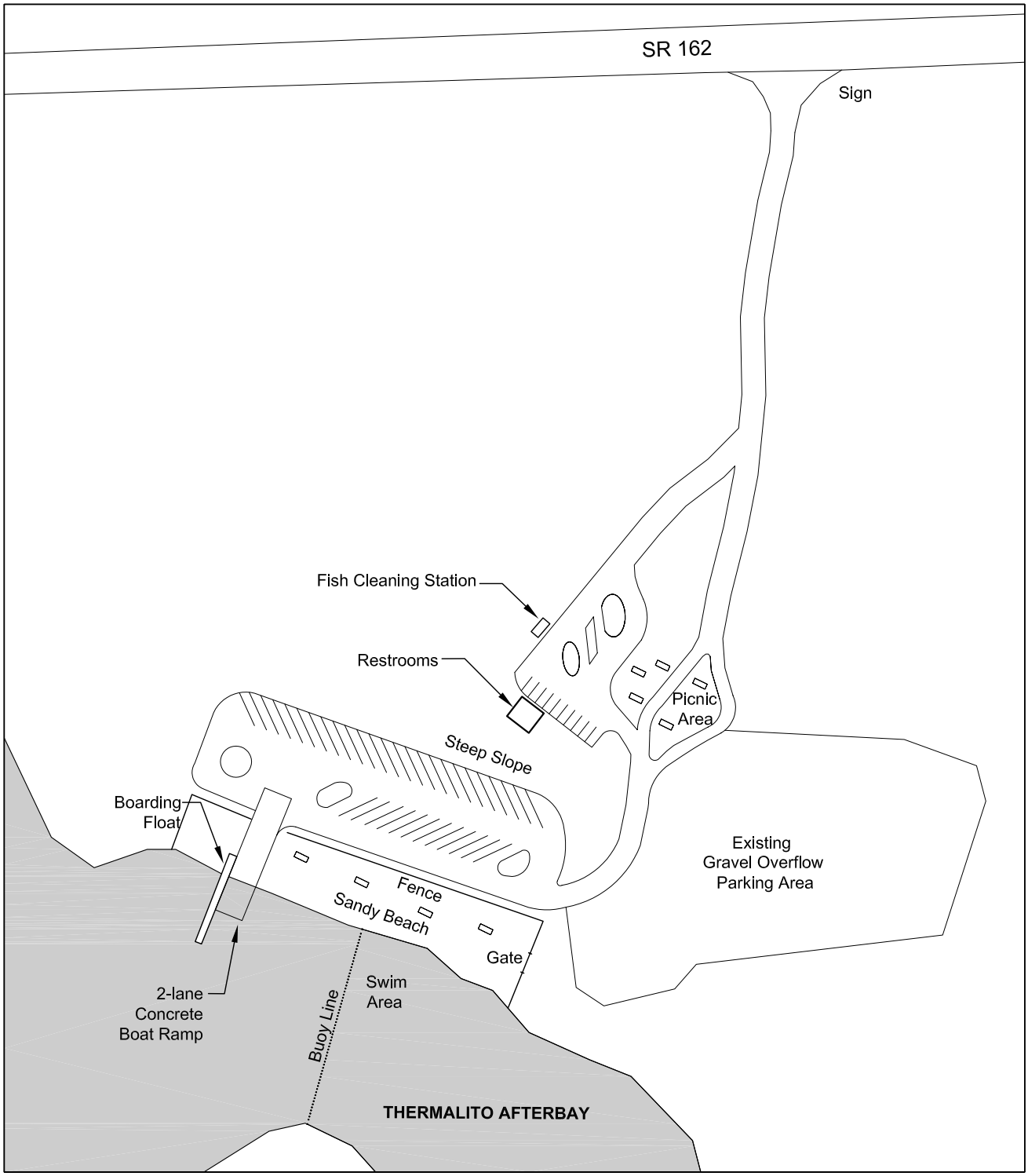
Figure # BD-7
Wilbur Road Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Monitor and maintain water quality at the swimming area.

North 0' 75' 150' 300'

Oroville Facilities Relicensing
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State of California
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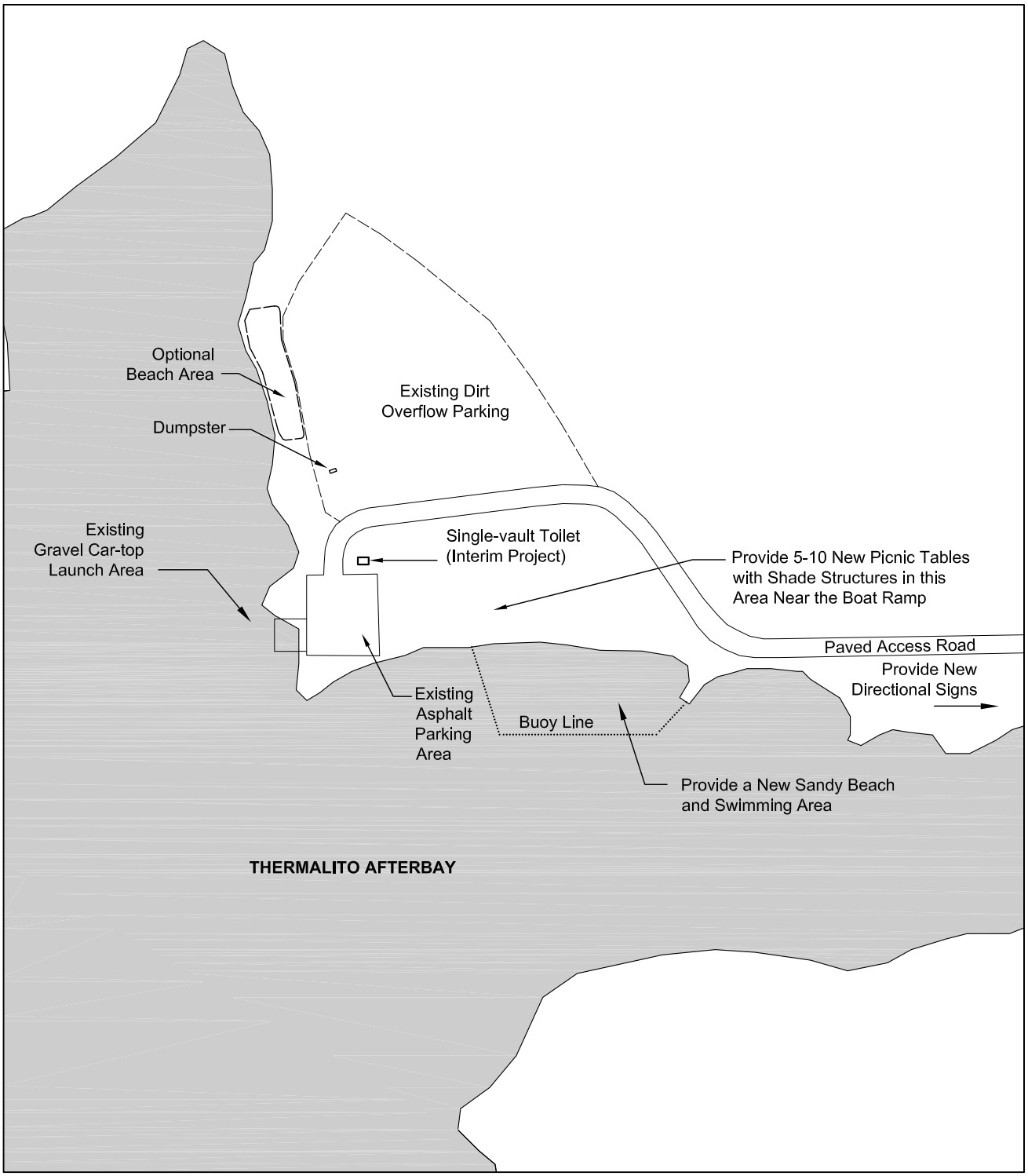
Figure # BD-8
Monument Hill Boat Ramp and Day Use Area



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:
-- Construct 5-10 new picnic tables with shade structures at this site.
-- As a component of the I&E Program, provide new directional signs for easier locating of this site.
-- Provide a new sandy beach and swimming area.
-- Provide a new vault toilet building (Interim Project).
-- Provide a new swimming buoy approximately 100-200 feet from the shoreline.

North 0' 100' 200' 600'

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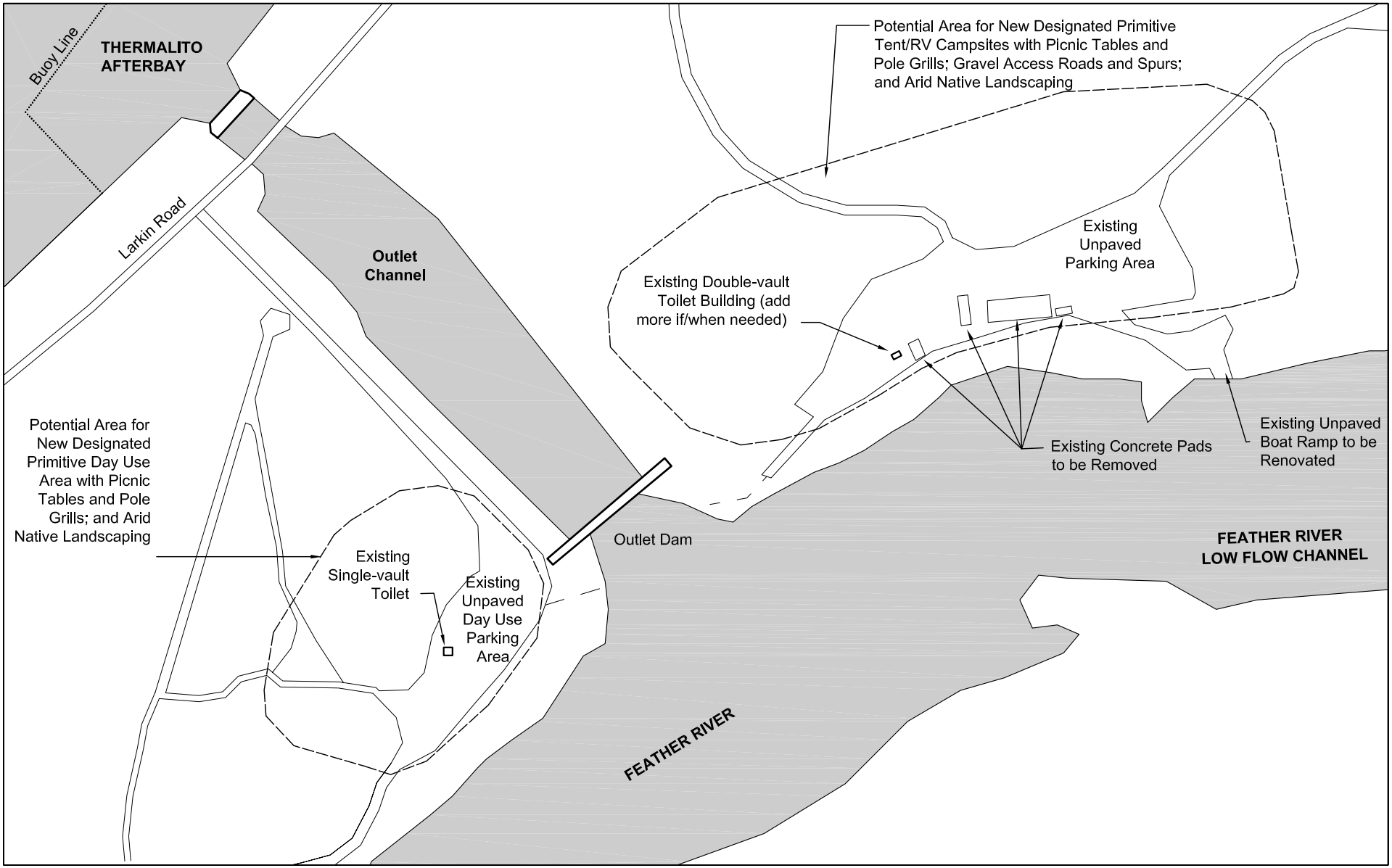
Department of Water Resources

Figure # BD-9
Larkin Road Car-top Boat Ramp



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Revegetate disturbed areas with native arid landscaping for shade and aesthetics.

-- As a component of the I&E Program, provide additional roadside directional signs for easier locating of sites.

-- Improve access roads with gravel.

-- North of the Outlet Channel, establish designated hardened tent/RV campsites (no hookups) with picnic tables, pole grills and gravel spurs with vehicle barriers, (number of new sites developed to be based on monitored demand, but not to exceed 40-acre area); 20 new campsites will be provided initially.

-- South of Outlet Channel, designate a day use area near the river; install 5-10 picnic tables and pole grills with arid native landscaping.

-- Provide increased visitor management and enforcement in the OWA; enforce fishing and other use restrictions.

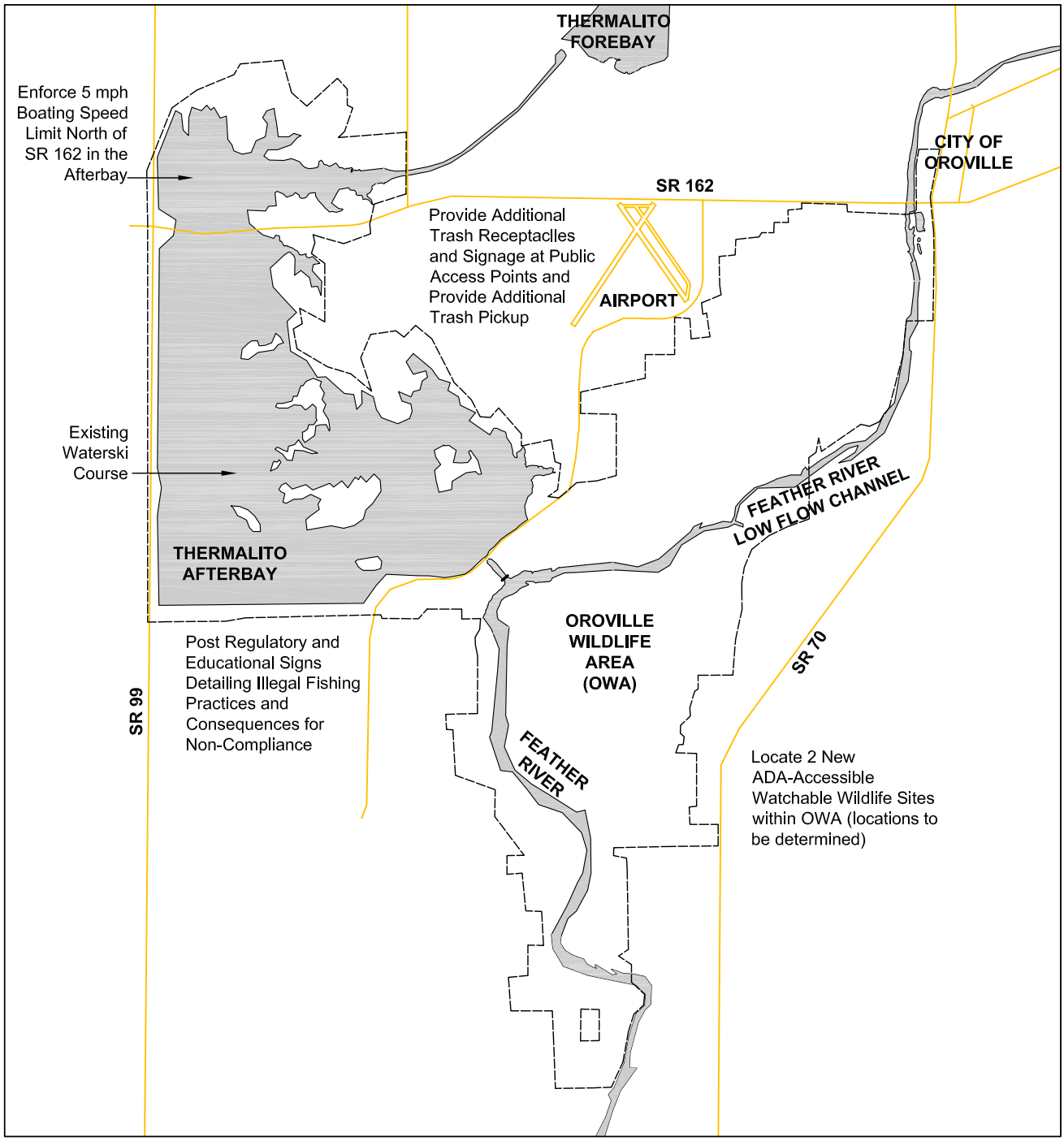
-- Provide additional vault toilet buildings if and when needed, based on future use levels.

North

0' 150' 300' 600'

Oroville Facilities Relicensing
FERC Project No. 2100
State of California
Department of Water Resources

Figure # BD-10
Afterbay Outlet Camping and Day Use Areas



SOURCE: EDAW Inc., 2003

Proposed Recreation Actions:

-- Provide additional trash receptacles and signage at public access points and provide additional trash pickup.
-- Post both regulatory and educational signs detailing illegal fishing practices and consequences for non-compliance.
-- Develop and implement an OWA Management Plan.
-- Provide adequate visitor management and law enforcement, particularly at peak use periods.
-- Locate and operate 2 new ADA-accessible Watchable Wildlife sites within the OWA (location to be determined) that have gravel parking, ADA-accessible trail access, and interpretive signage.
-- Enforce a boating speed limit of 5 mph on the Thermalito Afterbay north of SR 162; provide speed limit signs, buoys, and other measures as needed; enforcement to be the responsibility of the licensee through coordination with local law enforcement as appropriate.

OWA Boundary/DFG Managed Land

North

Not to Scale

Oroville Facilities Relicensing
FERC Project No. 2100
State of California
Department of Water Resources

Figure # BD-11
Oroville Wildlife Area (OWA)

APPENDIX D

Comprehensive Non-Motorized Trails Program

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COMPREHENSIVE NON-MOTORIZED TRAILS PROGRAM

Appendix D of the Draft RMP presents the Comprehensive Non-motorized Trail Program for Project No. 2100. This program is the joint responsibility of DWR and DPR and includes a summary of the existing trails program (additional detail is provided in Section 6.5 of the Draft RMP), background information regarding trail use designations, roles of trail providers, and an implementation plan. The goal of the trail program is to provide safe and enjoyable recreation trail access for walking, hiking, equestrian use, mountain biking and other dispersed uses such as shoreline and fishing access within the Project No. 2100 vicinity.

BACKGROUND

Existing Trails Program

There are approximately 75 miles of recreational non-motorized trails within the Project No. 2100 boundary (Table D-1 and Figure D-1). (See Figures Volume VII for figure.) The majority of these are in the LOSRA, which offers about 52 miles of trails open to hikers and many segments additionally designated for use by equestrians and/or bicyclists. The California Public Resources Code grants DPR authority to allow horses and other stock animals within units of the State Park System (PRC 4359), and also provides that bicycles may be excluded from certain Park trails and roadways (PRC 4360). Any user group may also apply for a Special Use Permit, from the jurisdictional managing agency, to allow organized use and special events in areas or on trails whether or not such areas are normally open to that user group. Granting such requests is typically contingent on a case-by-case evaluation of safety, resource protection, and the needs of other visitors.

Currently, horses and stock animals are authorized in LOSRA only on the following trails and trail segments:

- Dan Beebe Trail from Lakeland Blvd. to the Saddle Dam;
- Roy Rogers Trail;
- Loafer Loop Trail;
- Multiple-use section of the Potter Ravine Trail; and
- The Loafer Creek Horse Camp.

Furthermore, bicycles are currently excluded from the following trails:

- Roy Rogers Trail;
- Loafer Loop Trail;
- Dan Beebe Trail from Lakeland Blvd. to the Saddle Dam;
- Wyk Island Trail;
- Visitors Center Trail; and
- Loafer Creek Campground, Day Use, and Campfire Trails.

Table D-1. Existing trails and trailhead access in the project area.

Trail	Length	Access	Health & Safety	
	Miles of Trail	Number of Car and Car/Trailer Parking Spaces	Number of Toilets	Number of Garbage Receptacles
Bidwell Canyon Trail	4.9	107[2]/477[1]	2 [1]	3 [1]
Brad B. Freeman Trail	41.0	Various	-	-
Visitors Center (Chaparral Interpretive) Trail	0.2	107[2]	2[2]	6[2]
Dan Beebe Trail	14.3	Various	-	-
Loafer Cr. Campground/Day Use/Campfire Trail	1.7	251[4]	2[4]	2[4]
Loafer Creek Loop Trail	3.2	251[4]	1[5]	11[5]
Sewim Bo Trail	0.5	unknown	2	unknown
Potter's Ravine Trail	5.5	468[6]	2[6]	1[6]
Roy Rogers Trail	4.0	251[4]	2[4]	2[4]
Wyk Island Trail	0.2	477[1]	4[1]	3[1]

Note: The dash indicates that there is no facility or that the category does not apply.
[1] In the Bidwell Canyon area (boat ramp, marina, and overflow parking areas).
[2] At the Lake Oroville Visitors Center.
[3] Sycamore Hill section: equestrian and hikers only.
[4] In the Loafer Creek Day Use Area.
[5] In the northern Loafer Creek area.
[6] At the Spillway area (upper parking area).
Source: pers. Comm.., T. McBride 2003. Updated by EDAW 2004.

Outside the LOSRA, Project No. 2100 trails are generally managed to be consistent with trail designations on adjacent jurisdictions. For example, consistent with DFG management policies, bicycling and equestrian uses are permitted in the OWA but only on roads (the Brad Freeman Trail follows gravel roads around the Afterbay and through the portion of the OWA north of the Afterbay Outlet). Horses are also allowed in other areas of the OWA during permitted special events. However, DWR also manages the Brad B. Freeman Trail on other Project lands as a multiple-use trail, even though stock animals are not allowed on some adjacent Freeman Trail segments within LOSRA. Section 6.5 of the Draft RMP describes in detail the trails within the project area.

Trail maintenance in the LOSRA is carried out by DPR in conjunction with a number of user groups and volunteer organizations, and with limited assistance from DWR. A "mounted assistance unit" and the "bicycle patrol unit" help DPR by providing volunteer trail patrol and public information. Volunteer and user groups also assist in managing a variety of recreation-related projects and issues. Boy Scout groups, fishing and hunting organizations, equestrian groups, and other user groups assist DPR to some degree in trail maintenance.

Current maintenance of trails within the Project area is considered good by those surveyed as part of *R-13 – Recreation Use Surveys*. At least 90 percent of respondents contacted at Lake Oroville, Diversion Pool, Low Flow Channel, Thermalito Forebay, and Thermalito Afterbay were satisfied with the condition of trails.

Trail Use Designations and Stakeholder Concerns

Trail use designations have been a controversial topic within the study area. Trail use designations have changed on occasion in recent years; in general, a trend toward multiple-use (where it can safely occur) has been recommended by DPR consistent with its Statewide trails planning responsibilities and policies. However, a February 2002 DPR Superintendent's Order that changed many LOSRA trails from segregated to multiple-use was rescinded in 2004, after FERC denied DWR's request to amend the 1993 Amended Recreation Plan in support of this change. Pursuant to direction from FERC, the trail use designation has been returned to that existing prior to the February 2002 DPR change and consistent with the 1993 Project No. 2100 Amended Recreation Plan.

Prior to 2002, about 21.5 miles of trails were hiking/equestrian use only and did not allow biking (Dan Beebe, Loafer Creek Loop, and Roy Rogers Trails). After the trails were changed to multiple-use in 2002, about 64.5 miles of the total 75 miles were available for biking and about 38.5 miles were available for equestrian use. Designated trails for hiking/biking/equestrian use totaled about 37 miles, followed by hiking/biking (about 28 miles). There were about 9 miles of hiking-only trails, and 1.6 miles of hiking/equestrian-only trail at Sycamore Hill on the Dan Beebe Trail. However, following the 2002 Superintendent's Order, some trail users in the study area voiced preference that these trails return to their previous use designations.

After submittal of the trails-related Recreation Plan amendment by DWR in 2002, we learned from FERC Relicensing staff that amendments central to new license terms and conditions are generally denied by FERC during any ongoing relicensing process. In addition, objections presented to FERC may have contributed to FERC's denial of a Recreation Plan amendment, and effectively reversed the aforementioned changes prescribed by the Superintendent's Order. Trail use designations are now back to their pre-2002 designations.

ROLES OF TRAIL PROVIDERS

California Department of Parks and Recreation

DPR’s Northern Buttes District manages the LOSRA and the trails within the LOSRA portion of the Project area. Routine tasks performed by DPR staff include maintaining about 52 miles of trails. General DPR management goals for LOSRA include improving trails, ensuring safety, protecting natural and cultural resources, and providing information to trail users and other Park visitors. In general, DPR has broad management authority, under the California Public Resources Code, to make decisions regarding trail use and maintenance within units of the State Park System. Local needs and Statewide policy are both considered; at LOSRA, such management is periodically coordinated with DWR.

California Department of Fish and Game

DFG has management jurisdiction over lands within the OWA, and prescribes allowable recreation uses (including hiker, stock, and bicycle use of trails) consistent with preservation and enhancement of wildlife resources there. In general, DFG does not maintain any trail facilities. DWR and DFG periodically maintain the dirt and gravel roads in parts of the OWA, as needed, and in general these roads serve as trails in this portion of the Project.

California Department of Water Resources

DWR is responsible, under its existing FERC license, for the implementation of a variety of recreation-related projects and improvements including overall trails management. However, DWR does not manage the majority of the recreational opportunities and facilities in the Project area. Through various State codes cited previously and inter-agency agreements between DPR and DWR, DPR is DWR's management "partner" on the majority of Project No. 2100 recreational facilities.

DWR has constructed and manages substantial portions of the Brad B. Freeman Trail, supporting and assisting trail and sign maintenance activities periodically performed by trail user groups there. DWR has been solely responsible for maintaining gates, fences, and other major trail features and appurtenances. Trail maintenance is generally on an as-needed basis and does not follow a prescribed schedule.

NON-MOTORIZED TRAILS PROGRAM IMPLEMENTATION

Implementation of this program includes proposed actions, estimated costs, and preliminary schedule for the proposed trail program. The purpose of the implementation plan is to outline when and how proposed trail-related actions will be put into operation. The proposed trail-related actions are described below; a draft schedule is proposed in Table D-2 and costs are estimated in Appendix A.

Proposed Trail-related Actions

Proposed New Trails to be Constructed in the Project Boundary

Proposed new trail-related actions include:

- Opening and signing of an access road for bicycle use, south of the Loafer Creek Equestrian Campground;
- Loop Trails in the vicinity of Thermalito Forebay (approximately 2-4 miles; multiple-use wherever appropriate);
- Spur trails to facilitate shoreline access (Saddle Dam at Lake Oroville, fishing access at North Forebay; hiking use only); and
- A realignment of a section of the Brad B. Freeman trail in the vicinity of the Hyatt Powerplant Switchyard, in response to security concerns (multiple-use).

All of the proposed trails listed above are entirely within the Project No. 2100 boundary. The approximate proposed locations of potential new trail alignments are depicted in Figure D-2 and are described further below.

A graded dirt access and service road, which runs from near the Loafer creek Equestrian Camp to near the Saddle Dam trailhead will be designated as a bicycle trail. This segment will allow bicyclists to travel between the Saddle Dam Trailhead and the Loafer Creek Campground without encroaching on "hiker/equestrian-only" trails and allow bicyclists to skirt the Equestrian Campground. This trail segment will be managed and maintained by DPR.

Trail access (<0.1 mile) to the shoreline at the Saddle Dam Trailhead Access site is proposed. A similar trail segment or segments are proposed for shoreline areas of the North Forebay -- essentially spurs leading from the existing Brad Freeman Trail along the north shore. These trail spurs will require additional study to avoid impacts to giant garter snake habitat (these short spur trails are not shown in Figure D-2). DWR will construct these trails in coordination with DPR.

One or more new trail segments are proposed near the shoreline of the Thermalito Forebay. Again, further study is needed to determine potential suitable trail routes and compatibility with giant garter snake habitat that may limit trail expansion in the Forebay area. If new trails could be feasibly constructed here and potential impacts to sensitive habitat minimized, a trail around the south side of the North Forebay would create a new loop trail opportunity. A similar trail around the north side of the South Forebay will also be considered but requires review of security and property-line issues; however, if feasible, this would result in a trail loop around both halves of the Forebay, as well as around the entire Forebay by connecting trails with the existing Brad B. Freeman Trail (Figure D-2). DWR would construct any such trails in coordination with DPR.

The licensee will also provide a realignment of a section of the Brad B. Freeman Trail (see Appendix D) to eliminate security concerns posed by the current alignment in the vicinity of the Hyatt Powerplant Switchyard. The new alignment, to be designated and constructed to multiple-use standards, will cross the toe of Oroville Dam via an existing gravel access road which climbs to the existing paved dam crest road near the top of the spillway. The dam crest road is used by bicyclists and hikers/walkers to the south, and will be designated multiple-use to the north. Safety signs, directed at both trail users and motorists, will instruct caution and require equestrians to dismount and motorists to slow before and while crossing the spillway bridge.

Proposed LOSRA and OWA Trail Use Designation Changes

Many parties have collaborated to help draft a plan for use of Project trail resources with a goal to make optimum use of existing opportunities, while maintaining a safe and pleasant experience. Based on public input provided both inside and beyond the Relicensing Work Group and Settlement Negotiation processes, many alternatives were considered.

Most recently, a “Trails Focus Group” (TFG) convened through the Project No. 2100 settlement negotiations process with the purpose of discussing the trails issues collaboratively, towards a goal of ultimately recommending a mix of trails and use designations that can be supported by all users. Figure D-2 illustrates a proposal that received broad support and embodies some accommodation of several goals:

- Some separate-use trail segments predicated on widely-recognized safety concerns (Sycamore Hill portion of Dan Beebe Trail);
- The need to maintain connectivity of Project recreation areas for all trail users, to the degree practicable;
- A general multiple-use objective to make much of the Project's trail resources available to as many public trail users as possible;
- Some equestrian-only trail segments associated with the unique equestrian campground in the Loafer Creek area (much of the Roy Rogers Trail and a portion of the Loafer Creek Loop Trail); and
- A monitoring plan to protect natural and cultural resources associated with the trail maintenance and routing.

Consistent with these goals, the licensee proposes to designate trails managed under this RMP as depicted in Figure D-2 and denoted in Table D-2. In summary, several areas currently closed to bicycle use are proposed to reopen to multiple-use: much of the Dan Beebe Trail (except Sycamore Hill); most of the Loafer Creek Loop Trail (except segment south of Equestrian Campground); and a necessary connecting segment of the Roy Rogers Trail (from the Loafer Creek Campground and parking area to the new bicycle-designated service/access road).

Additionally, areas of LOSRA currently closed to equestrian use will be designated open for such use, generally in the context of proposed multiple-use trails: all of the Bidwell Canyon Trail (from Lake Oroville Visitors Center to Saddle Dam), the Brad Freeman Trail on the north shore of the Diversion Pool ("Burma Road”), and the Brad Freeman Trail around Thermalito Forebay.

Several segments of trail are proposed for "hiker/equestrian-only" use: the portion of the Dan Beebe Trail over Sycamore Hill; most of the Roy Rogers Trail; and a portion of the Loafer Loop Trail (segment parallel to the new bicycle-designated service/access road).

Hiker/bicycle-only segments of trail, closed to equestrian use, will include 1) the roadway over Oroville Dam; and 2) the Loafer Creek service/access road (parallel to hiker/equestrian-only segment).

Several segments of trail, designated black in Figure D-2, are intended for foot traffic only. Several are ADA accessible, and all offer interpretive signage and other educational opportunities. In general, the overriding consideration for maintaining these trails in their current configuration is their narrow design reflecting their original pedestrian purpose.

Table D-2. Proposed trail use designation changes and new trails in the project area.

Trail	Length	Designation	
	Miles of Trail	Present	Proposed
Bidwell Canyon Trail	4.9	Hiking, Biking	Multiple-use
Brad B. Freeman Trail	41.0	Hiking, Biking[1]	Multiple-use[2]
Visitors Center (Chaparral Interpretive) Trail	0.2	Hiking only	Hiking only
Dan Beebe Trail	14.3	Hiking, Equestrian	Multiple-use[3]
Loafer Creek Day Use/Campground Trail	1.7	Hiking only	Hiking only
Loafer Creek Loop Trail	3.2	Hiking, Equestrian	Multiple-use[4]
Sewim Bo Trail	0.5	Multiple-use	Multiple-use
Potter's Ravine Trail	5.5	Multiple-use[5]	Multiple-use[5]
Roy Rogers Trail	4.0	Hiking, Equestrian	Hiking, Equestrian[6]
Wyk Island Trail	0.2	Hiking only	Hiking only
Spur trail to Lake Oroville at Saddle Dam area	<0.1	NA (new)	Hiking only
Service road for bicycle access to Saddle Dam	0.7	NA (new)	Hiking, Biking
North and South Forebay Loop Trails (new segments connecting to Brad Freeman Trail)	2.0-3.0	NA (new)	Multiple-use
Spur trails to Thermalito Forebay shoreline	0.1-0.5	NA (new)	Hiking only

[1] Some portions of the Brad Freeman Trail outside of LOSRA are open to equestrian use.
[2] Additional segments of the Brad Freeman Trail on the north shore of the Diversion Pool (Burma Road)and around Thermalito Forebay would be opened to equestrian use.
[3] The Sycamore Hill segment would remain closed to bicycle use.
[4] The segment of this trail south of the Equestrian Campground and parallel to the service/access road would remain closed to bicycle use.
[5] All but a short pedestrian-only segment near Spillway cove is multiple-use.
[6] A segment of this trail connecting the campground to the service/access road would be opened to bicycle use.

Proposed Trail Maintenance Changes

In terms of trail maintenance, the area with the highest percentage of survey respondents that were dissatisfied with trail condition was the OWA. Litter was the top reason for dissatisfaction. Measures for additional trash receptacles and litter pick-up along the Feather River in the OWA are included in the Draft RMP, Appendix A.

The licensee proposes that trail maintenance in the LOSRA and other Project lands continues to follow the standards and frequency currently established. Trail maintenance will be monitored over time per the Draft RMP Recreation Monitoring Program.

Schedule

The following schedule proposes the period within the new license term when proposed actions will be implemented.

Table D-3. Implementation schedule for the Comprehensive Non-motorized Trail Program.

Proposed Action	Proposed Implementation Timing
Saddle Dam Shoreline Access Trail	Period L-1
Service Road from Saddle Dam Area	Period L-1
Forebay Area Shoreline Access Trails	Period L-1
Forebay Area Trail Loop(s)	Period L-2
Freeman Trail Realignment, Hyatt Switchyard Area	Period L-1

Costs

See Appendix A.

APPENDIX E

Agreements between DWR and Other Parties

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Placeholder—All future relevant recreation resource agreements will be placed in this appendix when completed after license issuance when the RMP is finalized.

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APPENDIX F

Recreation Monitoring Program Details

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RECREATION MONITORING PROGRAM
Traffic Counter Monitored Sites (2004)

- Lake Oroville State Recreation Area (DPR)
  - North Thermalito Forebay
  - South Thermalito Forebay
  - Lime Saddle Marina
  - Cartop Boat Ramps
    - Nelson Bar
    - Vinton Gulch
    - Dark Canyon
    - Foreman Creek
    - Stringtown
  - Bidwell Marina/Campground
  - Loafer Creek Campgrounds and Day Use
  - Spillway/Oroville Dam
  - Enterprise
  - Diversion Pool
  - Lake Oroville Visitor Center
- Oroville Wildlife Area (DFG)
  - Headquarters Entrance
  - Afterbay Outlet
  - Palm Avenue
  - Vance Avenue
  - Highway 70 Entrance
  - Pacific Heights Road
- Thermalito Afterbay and Other Sites (DWR)
  - Monument Hill
  - Larkin Road
  - Wilbur Road (2)
  - Feather River Hatchery (2)

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APPENDIX G

FERC License Terms and Conditions for Recreation Resources

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Placeholder—All future FERC recreation resource license terms and conditions will be placed in this appendix when the new FERC license is issued and when the RMP is finalized.

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APPENDIX H

Settlement Agreement between DWR and the Parties for Recreation Resources

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Placeholder—Recreation resource settlement agreement language will be placed in this appendix when available and included when the RMP is finalized.

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APPENDIX I

Abstracts: Recreation Studies Conducted During Relicensing

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Abstracts from the 19 recreation resource and related socio-economic studies conducted for Project No. 2100 relicensing are included in this appendix. For the final RMP filed with FERC after license issuance, full CDs of each of these study reports will also be included to serve as a library for future use.

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R-1 VEHICULAR ACCESS

This study identifies the adequacy of vehicular access routes to the Oroville Facilities recreation areas. Adequate access is needed to accommodate current use and future recreation demand. The Federal Energy Regulatory Commission (FERC) guidelines direct the California Department of Water Resources (DWR) to ensure the public's access to recreation facilities within the Project area. Specifically, FERC guidelines state that the licensee, DWR, shall "make provisions for adequate public access to such project facilities and waters" (Part 2, Subchapter A, Chapter One, Section 2.7 of 18 CFR).

This objective of this study is to examine vehicular access opportunities and constraints to Project area land and water resources. Current access conditions, identification of potential future development, and effects of Project operations on public access are also discussed.

This report summarizes vehicular access to each recreation site within the Project area (Section 5.2). Vehicular access to trailhead points is discussed in Section 5.3. A list of roads, their type and condition are provided in Section 5.4. Future known road development projects are presented in Section 5.4. A summary of constraints to, and opportunities for, vehicular access is listed in the Conclusion, Section 6.0.

In general, transportation routes to Project area recreation sites are without constraints to vehicular access. Roads leading to areas that receive the highest use are paved and in good condition. Average and low use areas are serviced by paved roads in good condition. There are some instances where roads are in poor condition within low use and undeveloped areas, such as within the undeveloped Oroville Wildlife Area (OWA). Recreation management goals will determine what recreation areas will be expanded in the future and thus what roads may need to be widened or improved. If the management goals at the OWA are to avoid significant new development and/or to provide a more primitive driving experience, then it may be appropriate to have low-standard roads.

R-2 RECREATION SAFETY ASSESSMENT

This document presents the results of the Recreation Safety Assessment, one of several recreation studies conducted to support Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). This study presents a quantitative and qualitative assessment of public safety as it relates to existing recreation activities within the study area, and develops proposed recommendations by the study plan authors to be considered during the relicensing process.

INTRODUCTION

This study report is divided into seven sections. The first is an introduction that provides background information about the Oroville Facilities, and information about agencies responsible for public safety. Section 2.0 (Need for the Study) addresses why the study is necessary to support relicensing. Section 3.0 (Study Objective) addresses the purpose of the study. Section 4.0 (Methodology) discusses how the data and information used in this study were obtained. Section 5.0 (Study Results and Analysis) incorporates the results of this study. Section 6.0 (Public Safety Considerations) lists potential public safety actions to be considered during relicensing to enhance recreation safety in the study area over the term of the new license. The final section lists the sources and references used to complete this study.

The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to the FERC for the Oroville Facilities. As part of this relicensing process, a series of related studies are being conducted to assess and evaluate recreation resources associated with the Oroville Facilities. This report presents the results of one of those studies: an evaluation of recreation safety in the study area, including Lake Oroville State Recreation Area (LOSRA), Oroville Wildlife Area (OWA), and other areas with a nexus to the Project.

Lake Oroville is the second largest reservoir in California, after Shasta Lake. The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. The main purpose of the SWP is to store and distribute water to supplement the needs of urban and agricultural water users in Northern California, the San Francisco Bay area, the San Joaquin Valley, and Southern California.

The Oroville Facilities support a wide variety of recreational opportunities. They include boating (several types), fishing (several types), fully developed and primitive camping (including boat-in and floating sites), picnicking, swimming, horseback riding, hiking, off-road bicycle riding, wildlife watching, hunting, and visitor information sites with cultural and informational displays about the developed facilities and the natural environment.

Several federal, State, and local agencies and services have public safety responsibilities in the study area. Without inferring any order of priority, they are:

- FERC;
- United States Forest Service (USFS);
- Bureau of Land Management (BLM);
- California Department of Parks and Recreation (DPR);
- California Department of Fish and Game (DFG);
- DWR;
- California Highway Patrol (CHP);
- California Department of Boating and Waterways (DBW);
- California Department of Forestry and Fire Protection (CDF);
- Butte County Sheriff's Office;
- City of Oroville Police Department;
- Feather River Recreation and Park District (FRRPD); and
- First Responder.

NEED FOR THIS STUDY

This study is needed because FERC regulations require that licensees develop a comprehensive recreation plan during the relicensing process for implementation over the term of the new license. Appropriate measures to enhance public safety will be incorporated into the development and operations and maintenance (O&M) programs of the plan. This study also addresses Issue Statement R2—adequacy of public safety at the study area recreation facilities.

STUDY OBJECTIVE

The objective of this study is to identify public recreation safety issues and concerns within the study area; the study also proposes recommendations to address these safety issues and concerns in the new license. This study assesses current and historic recreation-related safety incidents and trends, as well as recreation safety-related management policies, procedures, and facilities and equipment. Recreation safety is important to all visitors, recreation providers, and managers within the study area.

METHODOLOGY

A variety of methods were used to analyze and document recreation safety issues and concerns to develop proposed recommendations. Once this information was compiled and analyzed, proposed recommendations were developed.

The following methods were used to complete this study, and a discussion of each method is included below:

- Interviews with safety-related personnel;
- Review of recreation surveys and safety issues;
- Review of incident reports / accident statistics;
- Field observations of potential hazards;
- Cell phone coverage / radio communications; and
- Wildland fire safety.

STUDY RESULTS AND ANALYSIS

Representatives of the primary agencies responsible for day-to-day recreation safety in the study area were interviewed. The goal of the interviews was to identify issues related to recreation safety from the point of view of law enforcement and land and resource managers. Representatives from the following responsible agencies were interviewed: DPR, DFG, Butte County Sheriff's Office, the City of Oroville Police Department, and First Responder (the local ambulance service). The following issues were reported (in no particular priority):

- Boaters often exceeding the 5 miles per hour (mph) limit in designated zones;
- Personal watercraft (PWC) users jumping wakes and following other boats too closely;
- Alcohol use while boating;
- Need for more enforcement officers to deal with boating safety issues;
- Boaters not wearing personal floatation device (PFD);
- Aquatic plants getting caught in the jets of PWC or jet boats;
- Daily water fluctuations at Thermalito Afterbay;
- Seasonal water level changes at Lake Oroville;
- Fights and assaults with deadly weapons at the Afterbay Outlet fishing area;
- Cases of hypothermia along the Feather River below the dam;
- Fires occurring frequently in the OWA and vegetation conditions creating various hazards for hunters and hikers in the area;
- No evacuation plan for the OWA in case of fire;
- DFG not being well-prepared for developed recreation management, despite areas within the OWA receiving heavy use comparable to developed recreation sites; and
- Illegal dumping within the study area, including cars, appliances, and items associated with methamphetamine labs.

Recreation user surveys were conducted and included questions related to recreation safety both within the study area and at similar sites in Northern California. These results provided valuable insight into the user experience with recreation safety in the study area. In general, a small fraction of the respondents identified behavior that put them at risk while visiting the study area. PWC and boats being too close to other boaters were mentioned as the most common at risk behavior. About 7 percent of the

respondents who identified themselves as trail users stated that they experienced an at-risk encounter while on a trail. The majority of both hunters and anglers stated that they were knowledgeable about the regulations and that the regulations allowed for a quality experience.

An evaluation of violations provided by DPR showed that vandalism and alcohol-related violations were the most common illegal activities in the LOSRA. In addition, information regarding boating accidents at Lake Oroville was obtained from DBW and DPR. The most common types of boating accidents were collisions with other vessels and skier mishaps. These two types of incidents also led to the most boating injuries. The only fatality reported from 1997 to 2002 was the result of a boat capsizing. There is no clear trend in the total number of accidents over the 6 years of reported accidents. With the exception of boats occasionally colliding and skier mishaps, other types of accidents appear to be fairly isolated incidents. As might be expected, the majority of accidents that occur at Lake Oroville are in the summer months. It is noteworthy that the number of accidents involving PWC use have declined since 1997. This suggests that new laws raising the minimum operating age and not allowing PWC users to jump waves close to other boats may have had a positive effect.

Radio and cellular phone coverage were examined in the study area by testing two major cellular providers' phones and both DPR and DWR communication radios. In general, radio communication is good within the study area. Cellular phone coverage is good in some areas, but there are several recreation sites and areas with intermittent or poor coverage.

Wildfire histories were also reviewed as part of this study. Very few of the recorded fires from the past 100 years occurred as a result of recreational use of the study area. However, many of the fires were caused by unknown or unidentified sources, some of which could potentially have been recreational use. CDF also tracks fire ignitions (cause, location, etc.), regardless if a wildfire of recordable size results. Since 1990, CDF has recorded nearly 400 fire ignitions in the study area. The most recorded cause of wildfire ignitions in the study area vicinity was the use of equipment. Using a CDF fuel hazard model, areas within the study area were classified as moderate, high, or very high fuel hazard based on their potential for wildfires. Approximately half (53 percent) of the study area is classified as a moderate fuel hazard, 32 percent is classified as a high fuel hazard, and 15 percent is classified as a very high fuel hazard.

PUBLIC SAFETY ACTION CONSIDERATIONS

The following public safety considerations were identified for consideration during relicensing:

- Could facilitate coordination of incident and accident reporting to allow for a more comprehensive and timely analysis of safety-related accidents and incidents.
- Could increase the frequency of land-based DFG patrols. These patrols should concentrate on the Afterbay Outlet area, especially during the fishing season.
- Could provide additional warning buoys and/or signs identifying potentially shallow boating areas at Thermalito Afterbay.
- Could expand current visitor safety and management (Interpretation and Education) programs to help reduce safety-related incidents.
- Could develop a fire evacuation plan for recreational users in the OWA.

R-3 ASSESSMENT OF THE RELATIONSHIP OF PROJECT OPERATIONS AND RECREATION

The objective of this study is to determine the impacts of current Project operations and any proposed changes to operation of the Oroville Facilities on recreational use and recreational experiences of visitors engaged in various activities. Impacts to recreational uses and experiences can occur as a result of changes in reservoir pool levels, reservoir water temperature, and changes in flow rates downstream of Lake Oroville. Information gathered for this study will be used to recommend measures or facilities that may create, preserve, or enhance recreational opportunities within and in the vicinity of the study area (Subpart F, Section 4.51 of 18 CFR).

This study is one of 19 studies investigating recreation and socioeconomic issues. All of these studies are being conducted in support of relicensing the Oroville Facilities by the Federal Energy Regulatory Commission (FERC Project No. 2100). The Oroville Facilities are managed by the California Department of Water Resources (DWR) for the purposes of water supply, flood control, hydropower generation, water quality, fish and wildlife enhancement, and recreation.

This study was initiated in October 2002, and the results of this study rely in part on data collected for three other recreation studies initiated on Memorial Day Weekend, 2002: Study R-13 – *Recreation Surveys*, Study R-9 – *Existing Recreation Use*, and Study R-7 – *Reservoir Boating*. Additional data were collected as needed to complete the study tasks enumerated in the R-3 Study Plan. Field data collection for this study ended in July 2003.

Operation of the Oroville Facilities directly affects water-related activities such as swimming, boating, and fishing and can indirectly affect other activities such as picnicking, camping, or trail use. A DWR assessment of recreation in the Project area, conducted during a lengthy drought, noted that several Lake Oroville facilities have limited usefulness during times of low water (DWR 1992). During years of low runoff into the reservoir, the need to meet operational requirements can result in relatively low water levels.

PROJECT OPERATIONS ISSUES AND HISTORICAL PROJECT OPERATIONS

Review of past recreation studies conducted in the study area provided information on the effects of Oroville Facilities operations on certain facilities as observed in past years. In particular, these studies described and documented the effects of low water on boat ramps and the Loafer Creek swim beach. Review of data from the three contemporary recreation studies cited above, consisting of observations of use of recreation facilities and of boating activity and surveys of recreation visitors, provides further understanding of the effects of Oroville Facilities operations, in particular during the 2002 summer recreation season. The elevation of Lake Oroville was low enough during the latter half

of that season to afford opportunities to observe effects of low water on recreation facilities that would not be evident during summers with sustained higher pool levels.

Lake Oroville Conditions

Data on daily Lake Oroville pool elevation were reviewed for the 13 years from 1990 to 2002. A particular focus has been placed on the mid-May to mid-September period of each year, when the majority of recreational boating and shoreline use occurs. These data have helped to characterize historical changes in Lake Oroville pool elevations resulting from variations in inflow and in Oroville Facilities operations.

It is evident from these data that annual and recreation-season water level fluctuations have ranged widely in past years and may differ markedly from one summer to the next. The elevation of Lake Oroville at the end of May 2003 and the two preceding years illustrates this. The pool elevation at the end of May was 898 feet (2 feet below full pool) in 2003, 837 feet in 2002, and 793 feet in 2001 (105 feet lower than in 2003). The pool elevation at the end of August was 823 feet in 2003, and 735 feet in both 2002 and 2001 (88 feet lower than in 2003). Similar variation can be seen in other consecutive years, such as 1990 through 1993, when dry years were followed by wet years.

Additional data for the 2002 summer season have been compiled on surface water temperatures in Lake Oroville. In general, these data indicate that surface temperatures across Lake Oroville range in the mid-70s to low 80s (°F) through most of the summer.

Diversion Pool, Thermalito Forebay, and Thermalito Afterbay Conditions

Elevation data for the Diversion Pool, Thermalito Forebay, and Thermalito Afterbay indicate that elevation of the Diversion Pool and Forebay is generally constant, while Thermalito Afterbay fluctuates up and down on a weekly cycle within a range of about 5 feet.

Water is released from Lake Oroville into the Diversion Pool at a relatively constant temperature of 45 to 50°F. Summer water temperatures in the Diversion Pool and Forebay are usually in the 50s while surface water temperature in most of Thermalito Afterbay warms into the 60s. Temperature may periodically reach the low 70s at the southeast portion of Thermalito Afterbay, nearest the outlet to the Feather River.

Feather River Conditions

Summer water temperatures in the Feather River within the study area are typically in the mid- to upper-50's (°F) at the upstream end and in the mid- to upper-60s at the lower end of the study area, about 13 miles downstream.

Flow rates in the upper section of the Feather River (the “low-flow” channel or LFC) were about 600 to 700 cfs most days of the 2002 season. A 1983 agreement between DWR and California Department of Fish and Game (DFG) specifies a minimum of 600 cfs is to be released into the river from the Thermalito Diversion Dam for fishery purposes. In contrast, flows in the lower section of the river, below the Thermalito Afterbay Outlet, were about 1,200 cfs through May but increased steadily to about 6,500 cfs by mid-July, before dropping back to about 4,000 cfs by the end of August. Variations in these flow rates can influence the temperature profile of the river.

ASSESSMENT OF EFFECTS OF PROJECT OPERATIONS ON RECREATION USE

The effects of Oroville Facilities operations on Lake Oroville recreation activities and facilities relate primarily to reservoir drawdown, which begins in late spring to mid-summer each year. The effect of low pool levels on recreation use was assessed for this study in two distinct ways. First, attendance data dating back to 1990 were reviewed and compared with reservoir elevations at particular dates in each year to assess the relationship between low pool levels and recreational uses. Secondly, observations of recreation use, conducted for Studies R-7 and R-9 primarily during the summer 2002 recreation season, were used to describe effects of low pool levels on recreation activity and the usability of facilities.

Reservoir Elevation Effects on Attendance

Oroville Facilities recreation attendance data have been obtained for fiscal years 1974/1975 to 2000/2001 (the fiscal year begins July 1). Comparison of attendance for each fiscal year with average pool elevations for those years suggests that Lake Oroville attendance and pool elevation are related. Years in which the pool elevation was low tended to have lower attendance, and years with higher pool levels tended to have higher attendance. Recreation visitation modeling conducted for Study R-12 – *Projected Recreation Use* confirmed and quantified this relationship. However, the comparison also indicates that the years with the highest pool levels do not necessarily have the highest attendance and years with the lowest pool levels do not inevitably have the lowest attendance. It appears that other factors such as the time of year the pool level was low (i.e., a moderately high pool level maintained through the summer) and other factors unrelated to Project operations also affect attendance.

Low-Water Effects on Recreation Facilities and Activities

The pool elevation of Lake Oroville during the 2002 summer recreation season was lower than it was during most of the previous 10 years, providing the opportunity to directly observe effects of low pool levels of recreation facilities and activities. Pool elevation was 36 to 62 feet lower at the end of May, 2002 than it was in all but one year

between 1993 and 2000; a similar pattern is evident when reviewing Lake Oroville pool elevations at the end of August.

Low Water Effects on Boat Ramps

Boaters were able to launch on Lake Oroville throughout the 2002 summer season and into the fall. However, usage of the larger main ramps at Spillway Recreation Area and Bidwell Canyon was impaired by mid-summer. Boaters at the Spillway location enjoyed the best low-water launching conditions due to availability of the eight-lane low-water ramp and the low-stage paved parking provided there. The main ramp at Bidwell Canyon progressively narrows from the middle of the ramp to its lower end, reducing the number of lanes available as the reservoir level falls. By late summer, boaters were using an adjacent unpaved two-lane ramp with a gravel parking area. The Lime Saddle Ramp does not include a separate low-water ramp and was difficult to use due to low water and muddy conditions by the end of summer. The Enterprise Boat Ramp (BR) closed in mid-June, and the Loafer Creek ramp became unusable by late July.

The reduction in the number of launch ramps and lanes available as Lake Oroville is drawn down each year may result in more boaters having to wait to launch or retrieve their boats, though wait times do not appear to be excessive (generally 10 minutes or less) at most times.

Historically, both the Loafer Creek and Enterprise BRs have often been unusable by mid-summer. Enterprise Ramp has been unusable for more than half and Loafer Creek ramp about one-third of summer boating season days (May 15–September 15) from 1990 to 2002. The main launch ramps at Lime Saddle and Spillway were also unusable during parts of some years from 1990 to 2002, although this occurred less frequently than at Loafer Creek BR or Enterprise BR and the period of closure was usually limited to the last 35 to 40 days of the season. In late 2002, both of those ramps were extended to reach elevations 25 to 30 feet lower. The ramps will now be usable during all but the lowest pool levels (below 700 feet) that occur some years during late fall and winter. The ramp at Bidwell Canyon has also been paved to a similar elevation.

Low-Water Effects on Car-top Boat Ramps

The primary function of the car-top boat ramps is to provide opportunities for hand launching of boats (e.g., canoes and kayaks) and access to the shoreline for non-boaters. Most are situated on more remote parts of the lake and provide a less-developed setting than the main boat ramps. The sites also are used for a limited amount of trailer-launching, mostly of small fishing boats, but this is not officially allowed.

The car-top boat ramps (essentially old road beds) vary in respect to what pool elevation affects them, depending on the slope of the land and the length and condition

of the old road beds that provide access to the shore and water. Three of these areas feature steep shorelines making hand launching difficult at low water levels and limiting other shoreline use. During 2002, the Vinton Gulch facility was only marginally usable for trailer launching the entire year, as the paved road was never in the water. The site continued to provide some opportunity for hand launching of boats and bank fishing into mid-June, until the pool elevation fell below about 825 feet. Similar to Vinton Gulch, pool levels during 2002 allowed only early-summer trailer-launching of boats at the Nelson Bar Car-top BR. By mid-June, visitors wishing to hand launch boats or fish or swim from the shore had to negotiate a steep and rocky shoreline. The Dark Canyon Car-top BR facility, with its access road running for some distance along the side of Dark Canyon cove, was usable for hand and trailer launching into early August, until the reservoir was below about 765 feet.

Unlike the areas just described, the less-steep shoreline of the Foreman Creek Car-top BR attracts shoreline use by both boaters and non-boaters. However, the road bed was out of the water by early August, when the reservoir elevation fell below about 765 feet, and use of the area was observed to be low after that time. The road bed at the Stringtown Car-top BR extends far enough to have allowed use for launching into early August. The county road to Stringtown Car-top BR, however, is long and winding, and few boat trailers were observed in the area. Shoreline use appeared to occur until the reservoir elevation was below about 800 feet, after which time the steepness of the shore and distance to the water made the area less desirable to visitors.

Low-Water Effects on Boat-in Campsites

Light use of some of the boat-in campsites was observed at the start of the 2002 summer recreation season, when the reservoir was about 60 feet below full pool. At that elevation, the necessity of hiking up the steep shoreline to the sites was not enough to entirely discourage use. By late June, the reservoir elevation had fallen an additional 23 feet and virtually no use of the boat-in campsites was observed thereafter.

Low-Water Effects on Swimming Access

The sole swimming facility on Lake Oroville, at the Loafer Creek day-use area, was not usable at any point during the 2002 summer season. The facility is designed to be used at pool elevations within about 50 feet of full pool. Swimming at other locations, particularly at car-top boat ramp areas, appeared to continue throughout the summer but became more difficult at most areas as the pool level fell (due to steep and muddy shorelines). The gentler topography at the Foreman Creek Car-top BR provided the latest swimming opportunities of the season, but often had limited desirability because of muddy shorelines and periodically turbid water.

Effects of Water Temperature on Swimming

Investigations into the effects of water temperature on swimming are focused on the LFC of the Feather River, Thermalito Forebay, and Thermalito Afterbay. Swimmers can access the river from Riverbend Park and other riverbank locations but are often deterred from using the river for swimming because of the low temperature of the water (around 60°F) throughout the summer. Water temperature data for the lagoon on which the popular swim beach at the North Thermalito Forebay DUA is located show the surface water periodically warms into the mid-70s but the deep water (3–5 feet down) remains in the 60s.

Some swimming was observed at the South Thermalito Forebay and Thermalito Afterbay (Monument Hill) facilities, but these areas were primarily used by boaters, personal watercraft (PWC) users, and bank anglers. No temperature data for those specific locations have been obtained, but data from nearby locations suggest that summer temperatures are no higher than about 65 to 68°F.

Effect of Flow Rates and Temperatures on Fishing

The temperature regime maintained in the Feather River within the Project area is primarily determined by the needs of cold water fish species such as salmon and steelhead, in both the Feather River Fish Hatchery and the river itself. The continued presence of these important species, which are the most popular targets for anglers on the river, are largely dependent on the adequate flows of sufficiently cold water, which are enhanced by current operations. Fisheries studies being conducted under the direction of the Environmental Work Group are investigating the potential for operational changes that would provide increased flows in the river to further improve fish habitat and survival. The Environmental Work Group is also investigating the potential for operational changes that may provide warmer water in the River, Forebay, and Afterbay, as desired by agricultural diverters and some recreational users of the water, while still meeting the needs of the coldwater fisheries.

The primary effect of reservoir operations on fishing at Lake Oroville relates to the effects of reservoir drawdown on shoreline and boat access as described above. A fisheries study being conducted under the purview of the Environmental Work Group is also investigating the effect of seasonal reservoir drawdown on 1) the availability of warmwater fish spawning and rearing habitat and frequency of nest mortality, and 2) distribution and amount of salmonid spawning and rearing habitat and accessibility to upstream tributary habitat. Lake Oroville's temperature profile is similar from year to year, despite reservoir drawdown and surface elevation differences. However, during periods of lower reservoir elevations, the volume of cold water in the pool available for release downstream is reduced.

ASSESSMENT OF PROJECT OPERATIONS ON RECREATION EXPERIENCES

The recreation facility effects described above might be expected to have significant effects on recreation experiences. However, the character, magnitude, and importance of those effects on visitors' recreation experiences were not immediately apparent. For this reason, the several survey efforts conducted in the study area were, in part, directed at learning more from visitors about the specific effects of low water levels and other operational factors on the recreation experiences they desired.

A series of survey questions asked Project area visitors whether they considered certain issues to be a problem in the recreation area they visited. The responses indicate that about 40 to 45 percent of Lake Oroville visitors considered water level fluctuation, exposed land during low water, and shallow areas during low water to be at least "a moderate problem." About one-quarter of all visitors surveyed considered each of these to be "a big problem."

Visitors who participated in the On-Site and Mail-Back Surveys had the opportunity to provide additional written comments on their survey booklets. The invitation to provide additional comments was intended to give visitors an opportunity to comment further on the topics most important to them and to provide more detailed information on their attitudes and opinions.

Nearly half of all visitors contacted on-site and about 70 percent of those who returned the Mail-Back Survey provided additional comments. Roughly one-third of these comments expressed concerns related in some way to low water levels. Many provided specific complaints or concerns about the effects of low water on their use and enjoyment of recreational facilities. The comments provided useful and direct insight into the effects of Oroville Facilities operations on recreation experiences. A few visitors suggested changes that they believed would improve their recreation experiences. Several examples of each type of comment are provided in this report.

ASSESSMENT OF EFFECTS OF FUTURE OPERATIONAL SCENARIOS

This portion of the assessment relies in large part on the results of operations modeling conducted by the Engineering and Operations Work Group. This modeling quantifies the likely future pool levels and temperatures and river flows and temperatures that will occur during different water-year types (dry, normal, wet) with different water release schedules and other operational changes.

Since 1990, Lake Oroville has experienced long periods of very low water (below 750 foot elevation) as well as long periods of high water (above 850 feet). A key focus in evaluating the operations modeling results was on the timing and amount of reservoir drawdown in the future. In particular, low pool levels occurring during the summer boating season (prior to mid-September) and pool levels below 800 feet (100 feet below full pool) are of interest due to the potential effects on recreation.

Operations Modeling Results and Recreation Implications

The operations modeling simulates Lake Oroville pool levels and indicates the potential for certain operational changes to affect Feather River flows and temperatures. The Feather River results are supplemented with data from observations and informal interviews collected during a three-day period in which typical water releases to the LFC were more than doubled.

Model Simulations Related to Lake Oroville Pool Levels

The Statewide model, CALSIM II, is the operations model that, among other things, simulates Lake Oroville's reservoir pool levels. CALSIM II uses inflows to Lake Oroville and local accretions and depletions that were developed by modifying historic hydrologic data. The modified data represents a synthetic data set for the years 1922 to 1994. The model uses the synthetic data as input to simulate Lake Oroville elevations with different levels of water demands. Model runs in which maximum water deliveries to State Water Project (SWP) contractors are assumed indicate that there is a nearly 100 percent probability that the boat ramps at Spillway, Lime Saddle, and Bidwell Canyon will be usable at the end of May, the traditional start of the peak boating season, in any given year. There is about a 92 percent probability that these ramps would be usable at the end of August, after which boating activity typically declines. Because of their shorter reach, the likelihood is lower that the Loafer Creek and Enterprise ramps would be usable by mid and late-summer. Model runs in which SWP water deliveries are reduced by about 30 percent from the maximum substantially increase the probabilities that ramps will be usable, particularly later in the summer and fall.

The same model runs also allow simulations of Lake Oroville pool levels during different water year types. The results indicate that, with the assumption of maximum water deliveries, all of the boat ramps with the exception of the Enterprise BR would be usable through the end of August during all wet and above-normal years and most below-normal years. During dry years, the results indicate that low water levels would cause the closure of Enterprise BR by the end of June and Loafer Creek BR by the end of August, while the other three ramps would remain usable all season. During some critically dry years, in particular those following dry or critically dry years, all ramps would be closed by the end of August, but would be open most of the peak boating season.

Model runs using the same synthetic historical hydrologic data as above, but comparing current (2002) and future (2020) level of development/land use in the SWP service area, were used to simulate whether Lake Oroville elevations are likely to differ from past levels. The results indicate that reservoir levels will be similar in 2020 to past levels.

Model Runs Related to Feather River Flows and Temperatures

Modeling related to the Feather River investigated the effect of different release flows and temperatures on water temperature in the Feather River downstream of the Thermalito Afterbay Outlet. The results indicated that higher flows (4,200 cfs vs. 1,000 cfs) reduced temperatures only a few degrees within the study area under typical summer meteorological conditions. Temperatures were affected more substantially under atypically hot weather conditions (daytime high temperatures of 110°F). Increasing the temperature of water released at the outlet, as expected, increased water temperature in the river; however, the results indicate that the water would warm only about an additional 1 to 3°F within the Project area under typical summer meteorological conditions regardless of the outlet flow temperature.

Observations of temperature and recreation use effects during the increased flow event on the LFC indicate that water temperatures were affected only slightly and temporarily, and angling activity (the primary recreation use of the LFC) increased. Some anglers felt the increased flow made wading more difficult or otherwise hurt their angling success, but most felt the increased flow had improved angling, or would do so in the longer term. There also appears to be some potential benefits of the increased flows for non-motorized boaters.

Recreation Modeling Results and Recreation Implications

Recreation modeling completed for Study R-12 – *Projected Recreation Use* quantified the effects of specific Lake Oroville pool levels on attendance at Lake Oroville and Thermalito Forebay. A significant relationship was found between past reservoir pool level and attendance at Lake Oroville, with low pool levels having a negative effect on attendance. Operations modeling results that simulate future Lake Oroville elevations may serve as input into this recreation attendance model to permit estimates of the effects of various future operational scenarios on Lake Oroville attendance. The very slight differences predicted for Lake Oroville elevations in 2020 as compared to the present, both for specific months and annually, equate to essentially no significant difference in Lake Oroville attendance due to future pool elevation changes.

R-4 RELATIONSHIP ASSESSMENT OF FISH/WILDLIFE MANAGEMENT AND RECREATION

The main objective of this study is to identify the effects of fish and wildlife management on providing recreational opportunities within the study area. The California Department of Fish and Game (DFG), the California Department of Water Resources (DWR), and California Department of Parks and Recreation (DPR) are responsible for fish- and wildlife-related recreation management both in the study area and in California as a whole; however, DFG holds the principal jurisdiction for fish and wildlife management under the various applicable laws and codes. This study describes the range of current fish- and wildlife-related recreational opportunities available in the study area, mainly focusing on the 11,870-acre Oroville Wildlife Area (OWA) and the 28,000-acre Lake Oroville State Recreation Area (LOSRA), and summarizes agency roles. It also suggests fish and wildlife management actions to maintain or enhance those opportunities.

METHODOLOGY

During the scoping and issues identification phase of the Oroville Facilities relicensing effort (Federal Energy Regulatory Commission [FERC] Project No. 2100), several issues were raised regarding the role that agencies with management responsibility can play to enhance fish- and wildlife-based recreation in the LOSRA and OWA, including hunting, fishing, wildlife viewing, and nature study.

This study is designed to incorporate research, interviews, survey results, and site visits to accomplish the tasks outlined in the study plan. Research focuses on review of existing management plans, laws, codes, agreements, and reports to understand the managing agencies' goals and legal requirements.

STUDY AREA AND RECREATIONAL OPPORTUNITIES

The lands within the Project Area, including the OWA and the LOSRA, provide opportunities for hunting and fishing. Different regulations apply to each area. Fishing- and hunting-related facilities and access are diverse and located throughout the study area, although opportunities are more numerous in the OWA than in the LOSRA. Additionally, the Feather River Fish Hatchery provides interpretive programs to individuals and groups throughout the year. Visitors can study nature and view wildlife throughout the study area by using numerous trails to upland areas and boat launching facilities that provide access to surface waters.

Habitat

OWA wildlife habitat consists primarily of valley/foothill riparian, annual grassland, riverine, and lacustrine (lake-type) habitats, with a small area of blue oak–foothill pine.

The Project area offers large areas of high quality wildlife habitat consisting primarily of lacustrine, blue oak–foothill pine, Sierran mixed conifer, ponderosa pine, and montane hardwood habitats.

When Oroville Dam was constructed, spawning grounds above the dam were made inaccessible to salmon and steelhead. DWR established the Feather River Fish Hatchery to compensate for this loss. A fish stocking program for Lake Oroville was later established to enhance the coldwater angling opportunities.

Loss of cover, which provides spawning and nursery habitat for warm-water fishes, is believed to be related to observed declines in standing crops of centrarchid species as a result of reduced food availability and higher predation upon young-of-year fishes in Lake Oroville. The goal of Lake Oroville fish habitat improvement activities is to enhance the year-class strength of warm-water sport fish through the addition of protective micro-cover and increased productivity of nursery areas (DWR 1995).

DEPARTMENT OF FISH AND GAME

Since DFG is the State agency primarily responsible for fish and wildlife management within the Project area, this study presents a summary of current DFG management practices. This study also includes a summary of the current locations for hunting, fishing, wildlife viewing, and nature study opportunities within the study area.

DFG's role in the OWA includes possessory interests and management responsibility, as "control and possession" of the OWA was transferred to DFG by DWR in stages over several years after Oroville Dam was constructed. Ideally, DFG manages wildlife areas to protect and enhance fish and wildlife habitat and the populations that depend on them, while allowing compatible recreation in the areas used by the public only to the extent that such uses do not interfere with the primary goals of fish and wildlife management. The OWA is managed under the guidelines set forth in the California Fish and Game Code, the California Code of Regulations (CCR), and the California Fish and Game Commission's policies. Additionally, under the California Fish and Game Code, DFG enforces fish and wildlife regulations throughout the State of California (including the LOSRA). The Davis–Dolwig Act of 1961 set forth provisions for fish and wildlife enhancement and recreation as "among the purposes of state water projects." Thus, it was under the guidance of the Davis-Dolwig Act that the OWA and the LOSRA were established for fish and wildlife enhancement and recreation, respectively.

The results of this study also include suggested methods for DFG to maintain and enhance fish- and wildlife-related recreation opportunities. Limitations currently inhibiting DFG management are summarized and recommendations are made for fish and wildlife management actions that may be needed. Additionally, this study identifies fish and wildlife management issues of other agencies such as the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries as they relate to

the study area. The results of this study may be used to validate the existing management structure or to formulate recommendations, including current and proposed funding and staffing of the fish and wildlife management agencies.

Current DFG staffing and funding levels, among other issues, may be interfering with or limiting effective and efficient fish and wildlife management. The OWA has recently operated at one-eighth to one-fifth of the budget of the three other staffed Wildlife Areas in the region. Because of limited staff and overall funding, fish and wildlife management and related law enforcement capabilities are limited. Visitor uses are not currently monitored or enforced specifically to benefit wildlife in the study area, although such management is identified in the 1978 OWA management plan.

Besides OWA-related expenditures, DFG also makes or shares expenditures within the Project Area in several areas. The activities supported by these expenditures include monitoring of the fishery, fish pathology, studying the benefits of the recreational fishery, genetic research, construction of fish habitat, evaluation of pollution in the fishery, operation of the management lands, fish population surveys, and law enforcement.

DEPARTMENT OF WATER RESOURCES

DWR also participates in fish and wildlife management, including fisheries and habitat management. For example, DWR has funded all of the Chinook salmon tagging for Lake Oroville, at a cost of approximately $245,000 to date. This DWR funding has resulted in increased reliability of Lake Oroville salmonid stocking, addressing one of the primary concerns of the local coldwater angling public. DWR also funds a contract with the Butte County Sheriff's Department for boat patrol on the Afterbay portion of the OWA. DWR has assisted DFG with fish rearing and stocking, and with developing management protocols at the Feather River Fish Hatchery.

DEPARTMENT OF PARKS AND RECREATION

LOSRA lands and facilities are managed primarily by DPR. Although LOSRA includes large areas of varied, high quality wildlife habitat, the area is managed primarily for the other recreational opportunities provided in the area, rather than for fish and wildlife. Wildlife management, while not a primary purpose, is within the scope of DPR authority as dictated by the California Public Resources Code, State Parks and Recreation Commission policies, and DPR Resource Management Directives.

HUNTING

The Project Area, mainly the LOSRA and the OWA, are popular hunting destinations. Hunting is permitted in the OWA from September 1 through January 31 during open seasons for authorized species. Hunting in the LOSRA is limited to certain areas but is

permitted during the same times as in the OWA, and also during the spring turkey season. Hunting data were collected on two specific hunter surveys. Based on activity data, it is estimated that 3 percent of visitors participate in hunting within the OWA. Hunting within the entire Project area accounts for nearly 14,000 recreation days (RDs) each year (EDAW 2003b).

Respondents to the Hunter-Focused On-Site Survey respondents identified Thermalito Afterbay, South OWA (east and west of the Feather River), and North OWA (north of the Thermalito Afterbay Outlet and south of State Route 162) as the most popular hunting areas. Respondents offered several reasons for choosing to hunt in the study area rather than in other public hunting areas in northern California, including:

- Proximity, accessibility, and no fees;
- Good habitat and game populations;
- Light to moderate crowding;
- Special events (e.g., junior hunts); and
- Recommendations from friends or family (EDAW 2003a).

While the majority of hunters indicated that they were satisfied, approximately 24 percent of respondents to the Hunter-Focused On-Site Survey indicated some degree of dissatisfaction with their hunting experience in the Lake Oroville area, including:

- Low game populations;
- Poor habitat (overgrowth by aquatic plants, lack of water/low water level);
- Negative encounters with other visitors;
- Unclean or unmaintained areas or facilities; and
- Lack of enforcement of hunting regulations (EDAW 2003b).

In addition, while the majority of respondents to the Hunter-Focused On-Site Survey felt that that the quality of hunting habitat was adequate, approximately 22 percent suggested that habitat could be improved. Nearly 70 percent indicated that lands for hunting were “too few” (EDAW 2003a).

FISHING

According to surveys recently conducted as part of the relicensing effort, bank fishing and boat fishing are the first and fifth most common primary activities of visitors to LOSRA, respectively, and the two most common primary activities of visitors to the OWA. Approximately 30 percent of survey respondents participated in bank fishing. Approximately 26 percent of survey respondents participated in boat fishing (EDAW 2003a). Fishing is permitted throughout the study area with the appropriate State-issued license, stamps, and cards as required under State law.

Salmon and black bass are the most frequently sought species; 22 percent of anglers listed each of these as the species they were fishing for on the day they were surveyed. Nine percent of respondents indicated they were fishing for trout (EDAW 2003a).

Approximately 20 percent of the survey respondents listed fishing as their primary reason for visiting the study area. Of the 27 percent of survey respondents to the On-Site Recreation Survey who listed bank or boat fishing as their primary activity, over half were satisfied with their experiences in the Lake Oroville area. Approximately 30 percent indicated some degree of dissatisfaction with the fishing experience in the Lake Oroville area. Although many based their dissatisfaction on their failure to catch any fish, others were dissatisfied for several other reasons including:

- Low lake levels or low flows;
- Small fish size and low fish populations;
- Crowding in fishing areas;
- Unclean or unmaintained areas and facilities, including shorelines;
- Negative encounters with other visitors;
- Poor access to fishing areas; and
- Lack of enforcement of fishing regulations (i.e., people fishing illegally).

In addition, half of survey respondents felt that the number of fish cleaning stations is “about right,” and approximately half of respondents felt that the number is “too low.”

WILDLIFE VIEWING AND NATURE STUDY

The Project Area provides a wide variety of terrain and habitats that support diverse plant and wildlife communities. The quality and diversity of habitat and wildlife species throughout the study area provide extensive opportunities for nature study and wildlife viewing.

Recently-conducted surveys indicate that nature study and wildlife viewing are the primary activities of 0.8 percent and 0.5 percent, respectively, of respondents surveyed throughout the study area (EDAW 2003a). Additionally, 9 percent of visitors listed nature study and 12 percent listed wildlife viewing as an activity participated in during some part of their visits to the study area (EDAW 2003a).

CONCLUSIONS

In the course of this study, ten fish- and wildlife-related recreation issues were identified as areas for potential maintenance and enhancement actions by management. These issues and actions include:

- Updated Management Agency Structure and Coordination of Regulations: Efforts to coordinate plans, goals, and agency directives through programmatic agreements or memorandums of agreement (MOA) could enhance fish- and wildlife-related recreation. Amendment of the Fish and Game Code could provide for an exception at OWA for established use patterns, recognizing the specific recreation uses there. The transfer of management responsibility for the OWA from DFG to another agency, such as DPR or FRRPD if feasible, is another alternative that would require specific enforcement procedures be codified so that the law would be clear about which codes or rules apply to these areas and enforcement officers would be able to reference a specific code section when issuing a citation. A third alternative, if implemented, would require that mining leases be terminated (or not renewed) and high-speed boating be prohibited.

- Management Plans: An updated management plan (or plans) is needed to guide the management of the OWA and the management of fish and wildlife throughout the study area; monitoring would likely be an element of plan implementation.

- Staffing and Funding: Staffing and funding, particularly in the OWA, has been identified as a challenge for fish and wildlife management in the study area. The topic of necessary funding is covered in more detail in Study R-5 – *Assessment of Recreation Areas Management*.

- Facilities, Operations and Maintenance: In general, within the Project area, recreation facilities are in good condition and visitors are generally satisfied with their experiences. Respondents to all surveys would like to see less litter throughout the Project area. Litter and illegal dumping are major issues within the OWA. Also, anglers and hunters have stated (in the On-Site Surveys) that there are too few visitor facilities within the OWA.

- Law Enforcement: Respondents to the On-Site and Mail-Back Surveys indicated that they would like to see an increase of routine patrols by existing staff in order to reduce illegal hunting and fishing activities, crime, and other undesirable activities. The multi-agency efforts to address these problems will require coordination for funding resources if they are to be maintained or enhanced in the future. However, within the OWA there are several issues such as illegal dumping and illegal long-term camping that will require actions on the part of area managers.

- Use Levels: On-Site and Hunter-Focused On-Site Survey respondents indicated that they felt slightly crowded at the location where they were surveyed. Periodic monitoring of use levels could help determine if more

facilities or lands are needed and in what locations. Study R-8 – *Carrying Capacity* provides a detailed analysis of this issue.

- Land Use: There are few conflicting land uses within the Project area as a whole. However, within the OWA, issues such as high-speed boating on Thermalito Afterbay and gravel extraction will require management resolution in the future. Some possible alternatives are discussed under "Management Agency Structure."

- Access: Management actions that could maintain and improve access include monitoring existing access roads and boat launches and performing maintenance as necessary to maintain the level of access desired. Hunters and anglers indicated that they would like earlier opening and later closing times during hunting and fishing seasons.

- Habitat: Habitat improvement and enhancement programs should be continued in order to maintain the current level of recreation opportunity. Many Hunter-Focused On-Site Survey respondents felt that the habitat for game species could be improved by adding more food plots and eliminating weeds such as the water primrose that are choking out areas of habitat.

Water Levels: In order to maintain current recreation opportunities, managers should continue to coordinate modifications of access points, boat launches, and other related facilities in response to changing water levels. Continued habitat improvement programs will also help minimize the impacts of water level fluctuations and flow changes on fish and wildlife and associated recreation.

R-5 ASSESSMENT OF RECREATION AREAS MANAGEMENT

This study is being prepared for the California Department of Water Resources (DWR) to identify the effectiveness of recreation area management in providing recreational opportunities within the Oroville Facilities Relicensing study area. The study identifies the current recreational opportunities provided in the study area and summarizes the jurisdiction of agencies that are responsible for recreation management. It identifies the recreation management actions needed to maintain or enhance these recreational opportunities, as well as the potential funding mechanisms that could accomplish those actions. As the California Department of Parks and Recreation (DPR) is the primary agency responsible for recreation resource management within much of the study area, the study focuses on current DPR management roles and practices. However, the roles of other agencies that have assumed some recreation management responsibility are also discussed in this study.

STUDY AREA

The Oroville Facilities are located on the Feather River at the foothills of the Sierra Nevada Mountains in Butte County, California. For the purpose of this study, the area of analysis is inclusive of all lands and waters within the Project area, as well as lands and waters within one-quarter mile of the Federal Energy Regulatory Commission (FERC) Project No. 2100 boundary or lands otherwise with a nexus to the Project.

METHODOLOGY

Primary sources of information used for this study were document review and interviews, with some site visits as necessary. Several criteria were used to evaluate management effectiveness: quality, level and type of recreation opportunity, user satisfaction and facility and site condition. These criteria were compared to survey data to help assess recreation management effectiveness.

RESULTS AND CONCLUSIONS

Background

Land ownership, land and recreation management, recreation program funding, and existing recreational uses throughout the study area involve a complex network of federal, State, local, and private stakeholders. Recreational uses consist of both day use and overnight use, and both land-based and water-oriented activities. Additionally, there are multiple sources of recreation funding and several responsible parties. Current recreational uses, ownership and agency management, recreation area management, and recreation funding are discussed in this report.

In 1961, the California Legislature passed the Davis–Dolwig Act (California Water Code Sections 11900–11925), which made DWR responsible for acquiring land and planning for recreation and fish and wildlife enhancement as part of the SWP. The Davis–Dolwig Act identifies four responsible State agencies: DWR, DPR, California Department of Fish and Game (DFG), and California Department of Boating and Waterways (DBW) . DWR is charged with planning for public recreation and fish and wildlife preservation and enhancement in connection with the development of SWP facilities. This duty involves acquiring all lands and locating and constructing all works and Project features so as to allow for fish and wildlife enhancement and recreational uses following construction of the Project. DPR design, construct, operate, and maintain public recreation facilities at State Water Project facilities. DFG has responsibility for managing fish and wildlife resources at State Water Project facilities. DBW, in turn, is charged with planning, designing, and constructing boating-related facilities.

Managing Agencies and Coordinated Plans

Lands, facilities, and recreational interests in the study area are owned and managed by a number of State, local and federal agencies, including DWR, DPR, DFG, DBW, FRRPD, USFS, and BLM. The properties and management responsibilities of each agency are detailed in a series of deeds, agreements, and transfers between the agencies involved. Under regulations of the FERC, DWR is ultimately responsible for public access, recreational opportunities, and associated recreation development within the Project 2100 boundary. Each of these agency's ownership and management responsibilities and current management practices throughout the study area are detailed in this study. Figures 5.1-1 through 5.1-3 in this study illustrate the jurisdictional boundary of each of the managing agencies.

The variety of management jurisdictions within the study area has led to an overlay of management plans, goals, responsibilities and actions. Current planning efforts are being better coordinated by DPR and DWR in concert so that each agency's management plan within their jurisdictions are consistent. DPR's updated LOSRA General Plan (currently under development) will address its broad mission and recreation management goals for the LOSRA. In contrast, DWR's new Recreation Management Plan (RMP) for its new license (to be developed) will define specific actions related to the Oroville Facilities. This type of coordinated DWR and DPR planning effort should be continued into the implementation phase and should also include DFG managers responsible for recreation opportunities within the OWA.

Recreation Management Assessment

In general, recreation management in the study area has been operating fairly effectively; however, there is room for improvement in several areas. The current management structure has led to some problems because of the multiple layers of jurisdictions. For example, there has been confusion for recreationists as to which

regulations apply at the OWA due to differing signs for each jurisdiction. Other problems that have been identified are more likely attributed to understaffing, such as enforcement efforts relative to litter and dumping in the OWA. One area of management structure that could be improved would be a better system for communication between agencies and between the agencies and the public.

Recreation management in the LOSRA involves collaboration among a number of agencies and organizations (pers. comm., Feazel 2003). Day-to-day coordination among DWR, DPR, DFG, and DBW is limited, but field staffs from the four agencies meet monthly to discuss recreation-related management issues throughout the study area. Otherwise, interagency coordination in the LOSRA, OWA, and throughout the study area is primarily project-specific. For example, DWR and DPR often work with DBW for funding and construction of boating-related recreational facilities. In addition, a number of other agencies and organizations play a variety of roles in recreation planning and management throughout the study area. CDF assists DPR with emergency fire and medical response and search and rescue (pers. comm., Feazel 2003).

Operations and Maintenance

Several categories of issues fall under the overall heading of operations and maintenance, such as visitor safety, litter and sanitation control, user fee structure, service and staffing, and landscape and maintenance.

Visitor Safety

Safety among visitors, to the degree practicable, is one an important concern of recreation managers. Relicensing Study R-2 – *Recreation Safety Assessment* addresses safety within the study area. Survey results indicate that current recreation management is operating effectively in terms of safety and law enforcement at most times and places in the study area. The OWA was identified as needing additional enforcement. Potential safety issues should continue to be monitored in the future to see if an increase in the presence or type of law enforcement will be needed at certain times and places.

Use Levels

Use levels and degrees of crowding indicate to managers if, when, and how often facilities are reaching capacity. The majority of survey respondents indicated that they did not feel crowded when visiting the Lake Oroville area. Relicensing Study R-8 – *Recreation Carrying Capacity* details the capacity of existing facilities. Further analysis of capacity and needs within the Project area will be discussed in Relicensing Study R-17 – *Recreation Needs Analysis*.

Litter and Sanitation Control

Keeping facilities and recreation areas clean and free from debris are responsibilities of recreation area managers. Based on observed conditions within the LOSRA and OWA, and based on survey responses, recreation area managers have not been as effective as recreationists would like in controlling litter and sanitation. Litter and sanitation management is a cause for "moderate" concern (EDAW 2003b). The current problems with litter can mainly be attributed to understaffing. Lack of enforcement staff time dedicated to preventing dumping and littering, and lack of staffing to clean up litter and trash, contribute to the current situation. Additional funding and staffing to minimize litter accumulation could help improve the problem within the study area. Some staff time could be spent recruiting and organizing volunteers to help clean up litter and could help get the community involved in self-policing programs. Community involvement could help to prevent or identify people who illegally dump garbage, particularly in the OWA.

Costs Paid by Recreationists

User fees help offset the cost of operating recreation facilities at the Oroville Facilities including boat launching, day use and camping fees. Based on survey results, the recreation programs and the associated costs that are being administered are generally considered reasonable by a large majority of recreationists. A majority of recreationists may also be willing to pay more than is currently being charged. Most may also be willing to pay at areas that are currently free to the public (such as the OWA) to have additional services such as improved litter management.

Service and Staffing

Quality and appropriate type of service and staffing related to provision of recreation facilities and opportunities are one of the responsibilities of recreation managers. Quality and type of services can change over time and are often linked to funding allocations. Only 11 percent of those surveyed on-site considered service and staffing to be a moderate to big problem. As a result, it appears that area recreation managers and service providers are generally effective when it comes to service and staffing. It is likely that the majority of perceived problems with service and staffing occurred at the busiest times and locations during the recreation season. This would be consistent with the survey responses regarding occasional problems with safety, which indicate that although there is not widespread concern over safety, there are some potential problems at certain times and places, such as the Thermalito Afterbay Outlet during peak fishing times.

As demand for recreation use increases in the Oroville Facilities area, as projected in Relicensing Study R-12 – *Projected Recreation Use*, demand for recreational services and staffing will likely increase. These things considered, it continues to be in the best interest of recreation area managers and service providers to continue to provide services currently being supplied, as well as identify what services will be needed in the future.

Landscape and Maintenance

Landscaping at facilities can help communicate to visitors where to park and where entrances are located at buildings. Some landscaping, such as turf, significantly enhances some day use activities. Trees provide shade and cooling during hot weather. Attractive landscapes can also affect attitude and increase visitor expectations regarding quality and type of experience. In general, survey results indicate that the landscaping provided is adequate for most areas. However, sensitivity to the adequacy of landscaping and its maintenance varies among those surveyed and some places could be better landscaped. Future management plans should consider plans for improving and developing additional landscaping for some key locations.

Shoreline Access and Water Level

Adequate access to the Project is not only mandated by FERC, but access to shoreline and water is fundamental to providing water-based recreation. This topic is discussed in detail in Relicensing Study R-3 – *Assessment of the Relationship of Project Operations and Recreation*. Although reservoir pool level is primarily determined by factors other than recreation, managers could work to communicate more effectively with users affected by reservoir pool levels. Reservoir and river levels could be publicized during the recreation season so that recreationists have more opportunity to experience Lake Oroville when it is at optimum conditions, or to adjust their plans when pool levels are not optimum. Finally, recreation managers could provide alternative suggestions at kiosks and signs directing visitors to sites within the Lake Oroville area that may be less affected by low water levels.

Data Collection and Monitoring

As outlined in Relicensing Study R-9 – *Existing Recreation Use*, monitoring of attendance numbers and activities and locations will be valuable in the future. Relicensing Study R-8 – *Recreation Carrying Capacity* identifies when recreation facilities are expected to reach capacity in the future. Recreation managers should consider including an improved monitoring program in future recreation plans.

Communication with the Public

DWR and DPR communicate with the public through various means. The DWR and DPR websites on the Internet provide a large amount of information as well as opportunities for contacting staff at each of the agencies. However, if management structure changes, or there are alternative stakeholder forums or volunteer groups (which is recommended), these could potentially be very effective opportunities to improve the level of communication with the public.

Interagency Management

Due to the various roles and responsibilities of the State agencies, communication between staff members among each of the managing agencies is essential for recreation opportunities in the study area to be adequately provided to the public. Interagency coordination is important for recreation management issues that may arise around timing of events and changes in time of facility conditions and reservoir levels. Scheduling of events and hunting seasons requires communication for safety reasons. Clear divisions of responsibility are important for efficiency of Operations and Maintenance (O&M) and for recreation managers to be prepared to manage the unexpected.

Currently, field staff from DWR, DPR, and DFG have been meeting regularly to address this interagency management. However, more coordination and higher-level decisions may be needed to address and resolve all of the issues including funding sources and long-term planning.

Recreation Funding Structure

Funding for the development of recreational opportunities and facilities at portions of the SWP is a major concern for recreation managers, often limiting recreation development and constraining recreation management in the study area. The appropriate source of funding for the development of recreation facilities has been confused through multiple interpretations of the FERC license agreement and the Davis–Dolwig Act. The legal responsibilities under the Davis–Dolwig Act are generally inconsistent with recreation management requirements under the Federal Power Act. A MOA between the agencies and the SWC, outlining agreements regarding future recreation funding, could help establish a more clearly-defined funding structure.

Effect of Management Actions on Recreational Activities

One of the responsibilities of Project area managers is to provide adequate recreational opportunities at the Oroville Facilities. Opportunities for recreational activities are created by providing access to areas with recreation potential, developing the appropriate level of facilities to support those activities, and maintaining that access and facilities over time.

The study area, principally within LOSRA lands managed by DPR, offers a wide variety of recreational opportunities, including boating, camping, fishing, hiking, bicycling, horseback riding, hunting, interpretive programs and nature study, off-highway vehicle (OHV) use, picnicking, shooting, swimming, and wildlife viewing. Lands within the LOSRA contain extensive recreation facilities, and DPR manages a wide variety of the facilities and programs supporting recreation in the area, as detailed below. In addition,

recreational activities occur on other lands and waters within the study area, including the OWA.

Management Structure Evaluation

The management structure at the Oroville Facilities is complex, involving agencies at the federal, State, local, and regional level, as well as community organizations and interested individuals. To evaluate the effects of this management structure on public recreation opportunities at Lake Oroville, it is useful to understand other potentially viable management structures, compare the current recreation management structure with that of other similar areas, and investigate means to fund these management activities in the future. Based on this comparative review, there are some specific actions that management may want to consider, such as creating an improved public outreach and communication program, institutionalizing additional stable funding, and resolving OWA management issues.

Four other entities were investigated for comparison of recreation management structure with the Oroville Facilities. Two of these four entities represent a cross section of water-based recreation in the Northern California region. The other two are located in other regions of the United States.

Potential Management Structure Alternatives

This report discusses several alternative management agency structures to address issues identified in the relicensing studies. These include single agency responsibility, increased local responsibility (including the Joint Powers Authority), and increased reliance on concessionaires. Alternative stakeholder models were also evaluated. However, under any scenario, DWR (as Licensee) is ultimately responsible for providing recreation facilities and opportunities within the Project area.

Alternative management structures were evaluated. Management functions that are affected by management structure include:

- O&M;
- Visitor monitoring and surveying;
- Fee collection;
- Management of concession contracts;
- Building of new facilities;
- Recreation planning;
- Enforcement;
- Visitor management control;
- Communication with the public; and
- Budgeting and staffing.

A multi-agency structure, similar to the current management structure is recommended. While some improvements in management need to be addressed and some responsibilities need to be further defined and assigned, in general the current divisions of responsibilities are appropriate and functional. A single-agency structure is not recommended for managing all recreation resources within the study area. Although recreation is a component of DWR's mission to manage water resources for the SWP, DPR has recreation as its main purpose and has experience managing large recreation facilities. However, if the Oroville Facilities continue to be managed under a multi-agency structure, it will be important to provide more seamless, integrated management coordination to enhance service to the public.

General Project area enhancements and needs for facilities are addressed in R-17 – *Recreation Needs Analysis*. The management responsibilities that may need to be reconciled or reassigned include:

- Management authority for the OWA;
- Boating regulations on Thermalito Afterbay;
- Financial accountability for recreation spending within the LOSRA;
- Law enforcement within the study area;
- More local input to recreation management within the study area; and
- Communication with the public.

Management authority for the OWA was not examined as part of this study. This issue will require resolution between agency management decision makers with local staff input. Boating regulations on the Afterbay should be made consistent either through additional policy or through enforcement of existing restrictions. This decision should be made by DWR and DFG, also in conjunction with local input. DPR should implement accounting practices that will allow for regular review of expenditures within the LOSRA, separate from other Park units. Greater input by a local entity, such as the FRRPD or other representatives could be an important part of stakeholder involvement. Further, DWR should consider implementing a comprehensive public outreach program that would provide various avenues for communication with the public. This outreach program could include a friends group, a recreation commission, or an advisory committee.

Recreation managers should consider implementing an improved public outreach program that provides the public with opportunities to regularly meet face-to-face with recreation area managers, to gather information, to make recommendations and have concerns addressed. Stakeholder involvement will likely continue to be an important facet of recreation management in the next license period. Regular, continued interagency meetings during the new license term are also advised in order to continue improving communication, coordination, and planning.

Potential Supplemental Recreation Funding

Adequate funding is a critical element of long-term recreation management effectiveness. Additional funding sources should be sought. Additional funding should be prioritized and planned in conjunction with future recreation plans for the area. However, funding sources that support ongoing maintenance are less common than funding for the development of new facilities or for rehabilitation. Therefore, a recreation funding structure should be designed that maximizes grant opportunities for new development, but also provides for long-term maintenance and operations.

Developing and implementing a revised user fee system for LOSRA and OWA that provides direct funding for local, on-site maintenance and operation would have a two-fold benefit: (1) recreationists would be able to see a direct benefit from fees paid; and, (2) agency budget variability would be less likely to cause gaps in maintenance and operations. The feasibility of a new fee structure would need to be examined collectively by DWR, DPR, and DFG. Nevertheless, supplemental funding from other sources, in addition to user fees, would also be needed to cover anticipated costs. Revenue from operations rarely covers the operation costs at public recreation areas; this is especially true in California where the State has set high standards for a Park System that has often been a leader in the Nation.

R-6 ADA ACCESSIBILITY ASSESSMENT

This study is needed to meet the Federal Energy Regulatory Commission direction to ensure access to public facilities within the Oroville Facilities Relicensing project area by those with physical disabilities. Section 2.7 of 18 CFR was amended in 1974 to include consideration for the needs of the physically disabled. In 1991, the Americans with Disabilities Act Access Guidelines for Buildings and Facilities were published (Access Board Website 2003a). Guidelines were specified for new construction or retrofitting construction features such as parking, entrances, access routes, restrooms, and showers. Since 1991, design guidelines specifically intended for outdoor recreation facilities have been developed and are presented in this report.

The objectives of this study are to assess present degrees of adequacy and future accessibility needs for persons with disabilities who may use public recreation facilities within the study area. Recreation facilities in the study area support activities such as camping, fishing, picnicking, swimming, shoreline access, boating, and hiking.

Additionally, the results of this study may be used to provide recommendations for facility improvements. Compliance with the Americans with Disabilities Act (ADA) and meeting its associated accessibility requirements are important elements related to potential facility upgrades that may be considered for proposed protection mitigation and enhancement measures during Relicensing.

The development of ADA requirements for outdoor recreation facilities provides a context for the compliance analysis; these requirements are summarized in Section 5.1. ADA reports from the California Department of Water Resources, California Department of Parks and Recreation, and California Department of Fish and Game, and communications between researchers and agency staff, were synthesized for this study and are presented in Section 5.2. Findings based on these reports are summarized in Section 5.3. Campgrounds, day use areas, boat ramps, boat ramps with day use areas, and trailheads and trails are the five types of areas summarized in this study.

Facilities required to be ADA accessible within the study area meet, or will soon be upgraded to meet, ADA technical standards. Not all of the facilities are required to be made accessible. Additionally, the agencies have met the required ADA standards by providing disabled recreationists access to the “programs” available in the area. The programs that are accessible include campgrounds, boating facilities, picnic areas, and beach/water access.

R-7 RESERVOIR BOATING

This document presents the results of R-7 – *Reservoir Boating*, one of several recreation studies conducted to support Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to FERC for the Oroville Facilities. As part of the relicensing process, a series of related studies are being conducted to assess and evaluate recreation resources associated with the Oroville Facilities. This report presents the results of one of those studies: an analysis of reservoir boating within the study area.

INTRODUCTION

This study report is divided into seven sections. Section 1.0 (Introduction) provides background information about the Oroville Facilities. Section 2.0 (Need for the Study) addresses why the study is necessary to support relicensing. Section 3.0 (Study Objective) addresses the purpose of the study. Section 4.0 (Methodology) discusses how the data and information used in this study were obtained. Section 5.0 (Study Results and Analysis) presents the results of this study. Section 6.0 (Discussion and Conclusions) brings together key results and provides conclusions about reservoir boating in the Project Area drawn from those results.

Lake Oroville is the second largest reservoir in California by volume, after Shasta Lake, and the fourth largest in surface area with over 15,000 surface acres at full pool. The Oroville Facilities include three other smaller reservoirs downstream of Lake Oroville: the 320-acre Diversion Pool, the 630-acre Thermalito Forebay, and the 4,300-acre Thermalito Afterbay. The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. The main purpose of the SWP is to store and distribute water to supplement the needs of urban and agricultural water users in Northern California, the San Francisco Bay area, the San Joaquin Valley, and Southern California.

The Oroville Facilities support a wide variety of recreational opportunities. They include boating (several types), fishing (several types), fully developed and primitive camping (including boat-in and floating campsites), picnicking, swimming, horseback riding, hiking, off-road bicycle riding, wildlife watching, hunting, and visitor information sites with cultural and informational displays about the developed facilities and the natural environment.

NEED FOR THIS STUDY

This study is needed to comply with FERC regulations requiring preparation of a comprehensive recreation plan and, more specifically, requiring information in the license application regarding existing and future recreational boating use at Project facilities and waters (Chapter 1, Subpart F, Section 4.51 of 18 CFR). In addition, the study is needed to assess the impact of Project operations and reservoir management on recreational reservoir boating. Reservoir boating is a major recreation activity in the study area and is directly affected by project operations, particularly reservoir pool levels. Study R-3 – *Assessment of the Relationship of Project Operations and Recreation* provides a more in-depth discussion of this topic. River boating is discussed in Study R-16 – *Whitewater and River Boating*.

STUDY OBJECTIVES

The main objectives of this study are to describe existing recreational boating infrastructure, boating use, boaters' perception of conditions, and water surface management on Lake Oroville and the other reservoirs within the study area. Study results are used to determine the existing condition of boating facilities, existing use levels for reservoir boating, and whether existing facilities are adequate given the amount and character of boating use. Additionally, the results will help determine if capacity limits for boating are being exceeded on the reservoirs, and if reservoir surface water management changes are needed relative to recreational boating.

METHODOLOGY

Information on the features and condition of existing Project Area boating facilities was obtained through direct on-site observations, primarily conducted for Study R-10 – *Recreation Facility and Condition Inventory*. Boat ramp facilities were evaluated using standards developed by national and state boating organizations.

Information on boating management issues and problems were gathered through interviews with personnel from DWR, California Department of Parks and Recreation (DPR), and California Department of Fish and Game (DFG) and with representatives of law enforcement agencies with responsibilities in the Project Area. Statewide data related to boating accidents were compiled from California Department of Boating and Waterways (DBW) boating safety reports; Project-specific data were compiled from DWR incident reports and the DBW reports. These data were primarily compiled for Study R-2 – *Recreation Safety Assessment*.

Data on boating use at the Project reservoirs were obtained through direct observations of boat traffic conducted between May 2002 and August 2003. Observations were conducted on Lake Oroville from research boats traveling through designated zones, generally during the mid-afternoon peak-use time. Similar observations were conducted

on the other Project reservoirs from land-based vantage points. Observers mapped the location and type of all boats present, including boats in use but beached or moored near shore. A total of 37 observations were conducted on all zones of Lake Oroville, and a similar number were conducted at the downstream reservoirs.

Data on the characteristics of boaters and boater groups and on boaters' perceptions of conditions at the reservoirs were obtained through On-Site and Mail-Back Surveys conducted from May 2002 to May 2003. Over 2,500 visitors were contacted at Project Area recreation sites, more than half of whom boated during their visit to the Oroville area. Over 1,100 Mail-Back Surveys were returned. Additional information for comparison purposes was obtained through surveys conducted over one or two weekends at each of three other reservoirs in Northern California.

Surface water boating capacity was assessed by reviewing data from the recreation facility inventory, boat counts and other observations, visitor surveys, and inventories of sensitive wildlife and vegetation. The analysis addresses four types of capacity: facility, physical/spatial, social, and ecological. Based on the combined data on the four capacity types, current or likely future limiting factors are identified for each of six Lake Oroville zones and the downstream reservoirs.

STUDY RESULTS

The typically large annual fluctuation of Lake Oroville presents a significant challenge in providing for boating use. At the start of the study period in May 2002, the pool elevation was about 837 feet. About six months later, the pool elevation had decreased 147 feet to 690 feet, the lowest level during the 15-month study period. The pool elevation rose quickly over the following 6 months, reaching its high near 900 feet (full pool) in early June 2003, an increase of 210 feet. The typical drawdown over the summer peak boating season is 50–75 feet. Pool elevation changes on the three Project reservoirs downstream of Lake Oroville are relatively minor, although daily changes at Thermalito Afterbay occasionally have some effects on boating.

Boating Infrastructure and Effects of Reservoir Drawdown

The boat ramps and associated facilities on Lake Oroville and the downstream reservoirs were in good condition and generally meet nationally accepted and applied standards for the design of such facilities. Two boat ramps (Bidwell Canyon and Loafer Creek) do not meet standards for provision of designated single-vehicle parking spaces, and related car parking limitations have occasionally led to turn-away at Bidwell Canyon. All but two (Loafer Creek and Enterprise) of the five developed ramps meet standards for low-water usability as measured by the percent of days during peak boating season (from Memorial Day weekend to Labor Day weekend) that the ramps were useable. The other three existing ramps were extended by DWR in December 2002 and will provide boaters year-round access in most years.

In addition to aforementioned effects on boat ramps, seasonal drawdown of Lake Oroville reduces the usable boating area and may increase boating hazards associated with exposed land and standing timber in some areas. Major underwater hazards are marked by buoys maintained by DPR. Prominent signage at boat ramps warns boaters about lake level changes and submerged obstacles and warns boaters to watch for unmarked hazards.

Boating Safety and Other Key Issues

State and local law enforcement and resource agency personnel described several boating issues as being of special concern. These include boaters not wearing personal flotation devices (PFDs), unsafe use of personal watercraft (PWC), and alcohol use by boaters, among other concerns. Boaters' responses to surveys provided information on their level of concern about boater safety, water level, and boating facility issues.

Boating accident data for 1997–2002 indicated that reported accidents and injuries have been infrequent in recent years. Two accidents were reported at Lake Oroville and one at Thermalito Afterbay during 2002. One fatality occurred on Lake Oroville in 1999, and one fatality occurred on Thermalito Afterbay in 2001.

Boating Use Levels

Peak season boating use on Lake Oroville was highest on holiday weekends, when from 700 to over 1,000 boats were observed in use on the lake. Half or more of these boats were beached or moored on or near shore in popular sheltered coves where houseboaters and others congregate. Peak season non-holiday weekend use was approximately 300 to 650 boats, while weekday use was 150 to 225 boats. Overall, about half of the boats observed were runabouts/ski boats, 20 percent were houseboats, and about 10 percent were PWC. The remaining 18–20 percent consisted of pontoon boats, fishing boats, sailboats, and others. The Middle Fork and South Fork zones of the lake received the most use.

Boating activity during the non-peak season was much lower than the peak season, with 50–150 boats counted on weekends and 50–100 boats counted on weekdays. About three-fourths of boats on the lake during the non-peak season were fishing boats.

Boating use was very low on Diversion Pool and Thermalito Forebay throughout the study period. Use of Thermalito Afterbay was low in most areas, but was moderately high during the peak season in areas closest to the two boat ramps, where PWCs launch and congregate.

Boater Characteristics and Perceptions

The survey data provided a wide range of information on boaters and boater group characteristics. For example, most boaters were in groups of three or more, they were about evenly split between Butte County and non-Butte County residents, and a high percentage visited the Oroville area three or more times per year.

Boaters' perceptions of other boaters' behavior and of water conditions were particularly notable. About 10 percent said they had experienced boating behavior that put them at risk, and about 14 percent said they had observed such behavior putting others at risk. A wide range of behaviors was described, such as unsafe use of PWC and other boats coming too close or not yielding right-of-way. About 15–20 percent of boaters described moderate or big problems during their visit, including the number of other boats on the lake; boat speed, noise, and wakes; and encounters with PWC. Concern was much more widespread regarding some aspects of water conditions, with 48 to 55 percent of boaters indicating that they considered water level fluctuation, exposed land, and shallow areas due to low water to be moderate or big problems during their visit. These results probably reflect the low water conditions present by mid-summer of the 2002 peak season.

Regarding the adequacy of boating facilities, just over half of all boaters surveyed felt the number of temporary moorings or docks were too few (several of the major boat ramps have only a single boarding dock). From 35 to 44 percent felt there was a need for more boat-in campsites, places to get gas, boat ramps, and marinas, while from 55 to 65 percent felt the number of these facilities was "about right."

Boating Capacity

Several indicators were used to assess facility capacity at Lake Oroville, including boat ramp parking space occupancy, launch wait time, and perceived need for more ramps. Parking capacity was exceeded during the peak season at Bidwell Canyon Marina and, less often, at Lime Saddle Marina due to a large portion of vehicle-trailer spaces being used by single vehicles. At both sites, parking for visitors to the adjacent marinas appears inadequate for the level of use at the marinas. From 33 to 55 percent of boaters said they typically had to wait to launch at each primary ramp, and wait times were reported to average 9 to 11 minutes. A minority reported having to wait 20 minutes or more. Only at Bidwell Canyon Marina did a majority of boaters feel there was a need for additional boat ramps.

Assessment of social capacity for Lake Oroville relied primarily on survey data related to boaters' perceptions of crowding on the water and encounters with other boaters. Overall, perceptions of crowding were low, and relatively few boaters considered the amount of boat traffic or interactions with other boaters to be a problem. However, high percentages of boaters using the Middle Fork and South Fork zones on peak season

weekends and holidays felt those areas were at least moderately crowded. This suggests those zones may be approaching social capacity limits at those times.

Physical or spatial capacity was assessed by comparing the amount of space available to each boat observed during the boat counts to a set of proposed standards for boat traffic density. Boat traffic allowing 10 or fewer acres per boat was considered to be exceeding physical capacity. Average boat traffic density was found to be low to moderate on all Lake Oroville zones during peak season non-holiday weekends, even if beached or moored boats were included. Density was very low on the downstream reservoirs. Results were similar for peak season holiday weekends, with the exception that average traffic density was high on the Middle Fork zone if beached and moored boats were included in the calculation. If only active boats are included, average boat traffic density was moderate.

Ecological capacity was assessed by reviewing results of Study R-11– *Recreation and Public Use Impact Assessment* and focused on shoreline erosion and identification of sensitive shoreline vegetation. Additional sources included the Study T-9 – *Recreation and Wildlife* (Interim Report) and preliminary results from Study W-3 – *Recreational Facilities and Operations Effects on Water Quality*. Although some shoreline erosion was noted at Lake Oroville boat-in campsites, few areas with lasting impacts were identified. Steep and rocky shorelines minimize boater use in many areas around Lake Oroville. Few areas of sensitive shoreline vegetation occur around Lake Oroville, but such areas are more widespread around Thermalito Forebay and Afterbay. The likelihood of disturbance of bald eagle nesting territories was judged to be low based on restrictions placed on human activity and the low amount of boating activity in those areas.

For each zone of Lake Oroville and on the downstream reservoirs, capacity information was used to identify factors that either currently limit use or that will likely limit acceptable use levels in the future. Given current boating use, none of the Lake Oroville zones or downstream reservoirs was considered to be exceeding capacity. Boating use of the West Branch and Upper North Fork zones of Lake Oroville was judged to be approaching capacity limits, largely based on limitations on boat launching in the zones. Boating use of the Lower North Fork and Main Basin zones was judged to be below capacity limits, with the expectation that social capacity limits would be the most likely limit reached should use increase significantly in the future. Boating use of the Middle Fork and South Fork zones were judged to be approaching capacity limits, primarily based on the amount of water area available for active boats and the amount of shoreline suitable for houseboats and others to congregate in the zones. Visitor concerns about crowding at peak use times were also a factor for the South Fork zone.

All three downstream reservoirs were judged to be below capacity limits. Given the unique non-motorized and nature-focused boating experience offered by the Diversion Pool, social capacity was judged to be the most likely future limiting factor if use

increases. On Thermalito Forebay and Afterbay, the wildlife resources characterizing many shoreline areas and the importance of those reservoirs for waterfowl indicate that ecological factors are the most likely future limiting factor.

CONCLUSIONS

Overall, the Oroville Facilities are providing safe and enjoyable recreation opportunities and experiences for a wide variety of boaters. Most facilities are in good condition and adequately meet boater access needs, although some limitations related to parking have been identified at certain sites. While access at low water levels is good at most sites, boaters in the Enterprise area and visitors to the Loafer Creek area may have to launch elsewhere during some seasons due to low water. Safety issues related to unsafe boater behavior and physical water hazards appear to be limited in scope, but require continued attention and vigilance on the parts of managing agencies and law enforcement.

There are presently few issues of concern regarding boating use levels on the Project reservoirs. Even considering the highest use during peak season holiday weekends, active boat traffic levels are moderate or low in most areas. The high number of boats spending all or part of the recreation day beached or moored on or near shore reduces boat traffic issues. Given that use of the Middle and South Fork zones may be approaching physical and social capacity limits at peak use times, any actions that might increase boating activity or density in those areas should receive careful consideration in regards to possible capacity effects.

R-8 RECREATION CARRYING CAPACITY

The California Department of Water Resources (DWR) operates the Oroville Facilities, a multipurpose water supply, flood management, power generation, fish and wildlife enhancement and recreation project. The hydroelectric facilities operate under a license from the Federal Energy Regulatory Commission (FERC), which expires on January 31, 2007. Pursuant to the Federal Power Act, DWR is required to file an application for a new license on or before January 31, 2005.

FERC regulations require a comprehensive recreation plan; this study is being conducted in support of this plan development. Relicensing Study R-8 – *Recreation Carrying Capacity* helps address "Issue Statement R1—adequacy of existing Project recreation facilities, opportunities, and access to accommodate current use and future demand." This study investigates the existing capacity of recreation resources in the study area by analyzing four capacity types including ecological, spatial, facility, and social.

Relicensing Study R-8 assesses the types and levels of recreational use in the study area to determine if use levels are compatible with the capacity of the study area, both currently and during the term of the expected new license. Maintaining use levels within a recreation site's capacity is important in terms of protecting natural, cultural, and recreation resources, as well as "helping to assure public safety, providing predictability to private sector permittees and local communities, allocating opportunities among public and private sector providers, contributing to planning at a local or regional ecosystem scale, and helping to assess the consequences of management alternatives" (Haas 2002).

Quantitative and qualitative data were used to identify ecological, spatial, facility, and social capacity impacts and management parameters at each developed recreation site in the study area. One or multiple capacity types were identified as the primary limiting factor(s) at each recreation site based on the level of concern for each individual capacity type. A limiting factor is defined as an indicator that constrains the level of recreational use (capacity) at a site or area. The limiting factor often drives future decision-making regarding management priorities and monitoring programs and is often the "trigger" that determines when recreation use has reached a specific level of capacity.

After evaluating the capacity level for each indicator variable, an overall capacity conclusion was determined for each developed recreation facility and for the study area as a whole. Exploring different levels of capacity are important in determining where capacity concerns may exist and where management priorities and monitoring programs should be directed. Potential options to address any capacity concerns at study area recreation sites are briefly discussed. The results and options listed in this analysis will be elaborated in another relicensing study (Relicensing Study R-17—*Recreation Needs Analysis*), but are not necessarily study area needs, nor should they

be assumed to be protection, mitigation, or enhancement measures (PM&Es). Instead, these results, as well as the results from the other recreation relicensing studies, should be considered in aggregate and used to help formulate potential recreation needs for the study area.

Overall, recreational use in the study area is considered to be approaching capacity (Table 5.1-1). While all of the capacity indicator variables, except ecological capacity, are considered to be approaching capacity, the primary capacity-related limiting factors to recreational use in the study area include spatial and facility capacities. Spatial capacity is considered a limiting factor because of limited expansion area available at many of the existing developed recreation sites, as well as the high percentage of study area lands classified as “low” in terms of potential recreation development suitability. Facility capacity is a limiting factor because of percent occupancy constraints, as well as reservoir pool elevation variability, among other concerns. The capacity indicator variables in aggregate suggest that capacity-related decisions regarding recreation in the study area are a “moderate” priority at this time. The fact that both spatial and facility capacities are considered limiting factors is important for future capacity-related decision-making, as excess spatial capacity is usually necessary to expand the facility capacity of a developed recreation site. In the event that facility capacity must be expanded in the future, but potential spatial capacity is not available for expansion, other capacity-related management options will need to be considered.

R-9 EXISTING RECREATION USE

This document presents the results of the Existing Recreation Use study, one of several recreation studies conducted to support the Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to FERC for the Oroville Facilities. As part of the relicensing process, a series of related studies is being conducted to assess and evaluate recreation resources associated with the Oroville Facilities. This report presents the results of one of those studies: to estimate existing recreation use in the study area.

INTRODUCTION

This report is divided into seven sections. Section 1.0, Introduction, provides a list of the sites included within the study as well as background information on the Oroville Facilities. Section 2.0, Need for Study, addresses why the study is necessary to support relicensing. Section 3.0, Study Objective(s), describes the purpose of the study. Section 4.0, Methodology, discusses the data sources used in this study as well as the way that existing use, activity breakdowns of use, people-at-one-time (PAOT), vehicles-at-one-time (VAOT), campground occupancy, and trail use calculations were done. Section 5.0, Results and Discussion, describes the results of the study, including estimates of seasonal visitation, use by activity, PAOT, VAOT, campground occupancy, and trail use. Section 6.0, Conclusions, describes the conclusions drawn from the results regarding existing use within the Project area. Finally, Section 7.0, References, lists the sources and references used for this study.

Lake Oroville is the second largest reservoir in California, after Shasta Lake. The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants that stores and distributes water to supplement the needs of urban and agricultural water users in California. The Oroville Facilities support a variety of recreational opportunities, including boating (several types), fishing (several types), developed and primitive camping, picnicking, swimming, horseback riding, hiking, bicycling, wildlife watching, and hunting.

NEED FOR THIS STUDY

This study is needed to comply with FERC regulations requiring estimates of existing recreation use (both daytime and overnight visitation), as well as a description of the methods used to estimate use (Subpart F, §4.51 of 18 Code of Federal Regulations [CFR]). This study also will also contribute to FERC's direction regarding preparation of comprehensive recreation plans.

STUDY OBJECTIVES

The objectives of this study are to estimate existing project-related recreation use, both day and overnight use, at recreation facilities and dispersed recreation use areas within the study area. Use is estimated for both weekdays and weekends for specific areas and times of the year. The use level information from this report provides input into other recreation studies as well as information for a comprehensive recreation plan for the area.

METHODOLOGY

Several data sources were used to estimate existing recreation use, depending on the data available for each site. Data sources included DWR traffic counters, California Department of Parks and Recreation (DPR) campground information, observational data, other DPR data, and trail counters. Several aspects of existing use were calculated: seasonal visitation, amount of use by activity, PAOT, VAOT, campground occupancy, and trail use. Calculations for seasonal visitation depended on the data available for each site and measured the number of recreation days for the period between May 15, 2002, and May 14, 2003. Calculated visitation included the recreation season (May 15, 2002, to September 15, 2002) and the off-season (September 16, 2002, to May 14, 2003). Existing use was also subdivided by the amount of use by activity using observational data and professional judgment. Observational data were used to calculate average and maximum holiday and non-holiday PAOT and VAOT. Campground occupancy was determined based on the number of sites occupied out of the total number of sites available. Infrared trail counters were used to estimate use on segments of several trails within the Project area.

STUDY RESULTS AND DISCUSSION

Existing use is characterized in many ways. Visitation datasets catalog weekday and weekend visitor use in the recreation season and the off-season for the general study area and for each site within the study area (Section 5.1). Sites are grouped into general geographical areas including Lake Oroville, Diversion Pool, Thermalito Forebay, Thermalito Afterbay, the Oroville Wildlife Area (OWA), and additional sites both within and outside of the FERC boundary. Use is reported in recreation days, which is one person visiting for any length of time on one day. There were more than 1.7 million recreation days within the study area, with use nearly evenly split between the four-month recreation season and the eight-month off-season. Additionally, there was more total use on weekdays than on weekends in both seasons, except at the Thermalito Forebay, where there was more total use on weekends. However, all sites had more daily average recreation days in the recreation season than in the off-season, and most sites had higher daily averages on weekends than on weekdays.

Use at each site within the study area is also summarized by activity (Section 5.2). The percentage of use by activity and the number of recreation days per site per activity are reported, as well as the most popular activities for each geographical area based on the number of recreation days for each activity. The most popular sites for each activity (based on the number of recreation days) are also reported. Although the activities participated in vary by type of site, most sites have at least some bank fishing, boating access, sightseeing, picnicking, or swimming use.

Both non-holiday and holiday PAOT and VAOT are discussed (Sections 5.3 and 5.4 respectively). Non-holiday PAOT and VAOT are reported in terms of average and maximum weekday and weekend values for both the recreation season and off-season. PAOT values are presented for only those sites where use occurs at the site and where accurate counts of people could be done. VAOT is reported for almost all sites. Holiday PAOT and VAOT are discussed in terms of average and maximum numbers. In general, PAOT and VAOT were lower in the off-season than in the recreation season and generally higher on holidays. The North Forebay Boat Ramp (BR)/Day Use Area (DUA), Thermalito Afterbay Outlet, and Monument Hill BR/DUA had the highest PAOT numbers for both holidays and non-holidays. Bidwell Canyon BR/DUA/Marina, North Forebay BR/DUA, Lime Saddle BR/DUA/Marina, and Spillway BR had the highest VAOT numbers for both holidays and non-holidays.

Campground occupancy is discussed for all six developed campgrounds (Section 5.5). Average monthly occupancy rates, as well as average recreation season and off-season occupancy rates, are discussed for both weekdays and weekends. Graphs are also used to display the difference between weekday and weekend occupancy rates. Also reported are the number of days when campgrounds were at maximum capacity. In general, campgrounds had higher occupancy on weekends and during the recreation season than on weekdays and during the off-season. Most campgrounds had peak occupancy on recreation season weekends and low occupancy during the off-season. Three of six campgrounds did not reach maximum capacity. Loafer Creek Group Campground had the most days at capacity with 26 weekend days and six weekdays.

Both the total and daily average numbers of users at 10 locations in the Project area trail system are presented (Section 5.6). The data show that there was low to moderate use on trails throughout much of the year with peaks of 25–35 people per day. Trail use peaked in October and during special events and holidays in November.

CONCLUSIONS

The sites that contribute the most to overall use in the Project area are the Bidwell Canyon BR/DUA/Marina, Lime Saddle BR/DUA/Marina, and the Oroville Dam/Overlook DUA. The Lake Oroville area contributes about half of the use within the Project area, followed by the OWA, which contributes about 20 percent. At most sites, weekday use accounted for 50 to 69 percent of use, with corresponding 50 to 31 percent of use on

weekends during the recreation season and off-season. Also discussed are the most popular activities within the Project area. The top five activities are boating, sightseeing, bank fishing, picnicking, and swimming. A brief discussion of PAOT, VAOT, campground occupancy, and trail use is also included.

R-10 RECREATION FACILITY INVENTORY AND CONDITION REPORT

The Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to the Federal Energy Regulatory Commission (FERC) for the Oroville Facilities FERC Project No. 2100 (Project). As part of this relicensing process, a series of related studies were conducted to assess and evaluate recreation resources associated with the Project. This report presents the results of one of those studies: an inventory and conditions evaluation of recreation facilities and sites in the study area, and associated sites with a Project nexus. The study consisted of an initial inventory and description of the condition of existing recreation facilities within the study area boundary. Additionally, a brief examination is provided regarding recreation areas affected by reservoir level. There is a brief discussion about planned facility development in the Project area. There are no major projects planned.

Several goals were identified for this study, all of which are focused on the documentation and inventory of recreation sites and facilities in the study area:

- Gather and review available documents related to recreation development at the Project.
- Interview representatives from the California Departments of Water Resources (DWR), Parks and Recreation (DPR), and Fish and Game (DFG), and other agencies and groups associated with recreation in the Project area.
- Conduct a physical inventory of recreation development at the Oroville Facilities.
- Identify planned recreational development in the study area.

The Project area is located in Butte County, and the FERC Project boundary extends from south of the city of Oroville to reaches of the South Fork, Middle Fork, and North Fork of the Feather River. Lake Oroville and Oroville Dam are part of a complex that also includes the Hyatt Pumping-Generating Plant, Thermalito Diversion Dam and Power Plant, the Feather River Hatchery, Thermalito Power Canal, Thermalito Forebay, Thermalito Pumping-Generating Plant, Thermalito Afterbay, Lake Oroville Visitors Center, and the Oroville Wildlife Area (OWA).

Lake Oroville is the second largest reservoir in California, after Lake Shasta. The Oroville Facilities offer a variety of recreational opportunities, including boating, fishing, and camping. Camping experiences in the area range from fully developed campgrounds to primitive, less developed sites. Opportunities for boat-in and floating campsites also exist. There are two full-service marinas, nine boat ramps (BRs), six car-top BRs, 10 floating campsites, and seven floating restrooms located around Lake Oroville. There are developed recreation facilities at Bidwell, Lime Saddle, Loafer Creek, North and South Thermalito Forebay Recreation Areas, and Spillway. Other recreation opportunities include picnicking, swimming, horseback riding, hiking, off-road

bicycle riding, wildlife watching, and hunting. The area also offers visitor information sites with cultural and informational displays about Project-developed facilities and the area's natural environment. Additional recreational and visitor facilities are located at the Visitors Center, Diversion Pool, and Thermalito Afterbay, and in the OWA.

STUDY METHODS

The methodology used in this report was based on three sources of information: document reviews, telephone interviews, and field observations.

Document Review

Project-related documents were acquired from DWR and other sources for review. These documents provided an initial list of sites and facilities.

Interviews

Key personnel involved in recreation development, management, and planning at the Project area were selected as contacts to be interviewed from DWR, DPR, and DFG. A list of those interviewed is included (Appendix A). The purpose of conducting interviews was to gain knowledge into the planning process of the agencies and groups involved in recreation in the study area. Questions were asked about current projects to understand the potential effects on recreation facilities and visitor experiences at the Project area to ascertain information on future Project development.

Field Observations

The field observations incorporated two components:

- Year 2000 field inventory of existing recreation areas (supplemented in 2002 and 2003); and
- General assessment of conditions.

The two field observation components are described below.

Year 2000 Field Inventory of Existing Recreation Areas (Supplemented in 2002 and 2003)

Researchers conducted an inventory of existing recreation areas in the study area. The primary basis for the inventory was to count the units of each type of recreation facility (e.g., picnic tables, campsites, bathrooms) and assess their general condition. After review, the field inventory and conditions assessment were revisited in 2002 and 2003 to incorporate facilities that were not constructed or completed in 2000.

Methods for the recreation site facility inventory and evaluation study involved a comparison of site-specific field observations with published information from DWR, DPR, and DFG reports. Existing conditions in the Complex were systematically identified and documented through extensive field notes. Existing site and access areas were identified and documented on maps and summarized in table format. Included is a photographic record of samples from the sites and facilities photographed (Appendix B).

General Assessment of Conditions

The condition of existing developed recreation facilities in the study area was systematically evaluated through field observations. Researchers observed current conditions at the sites examined. To evaluate and categorize developed facilities covered by the inventory, four general categories of condition were used: (1) needs replacement (broken or missing components, or non-functional); (2) needs some repair (structural damage or otherwise in obvious disrepair); (3) needs some maintenance (primarily cleaning); and (4) is in good condition (functional and well maintained). Potentially unsafe conditions and signs of overuse were noted.

The following summary of results represents an inventory and evaluation of conditions at recreational sites in the study area. Results presented here include an inventory of recreation areas and a general assessment of their overall condition. The inventory is summarized in Tables 5.1-1 through 5.1-6. Conditions are summarized in Table 5.3-2. In addition, site photographs are presented in Appendix B.

PROJECT AREA RECREATION RESOURCES INVENTORY AND CONDITIONS ASSESSMENT

This section summarizes site features and conditions at the Project area.
This Recreation Facilities Inventory and Conditions Report used literature, interviews, and field observations to assess the level of developed recreational facilities.

Overall, most of the developed recreation facilities at the Project are in good condition. There are a few exceptions to the acceptable conditions of recreation facilities (see Figure 5.0-1). These include basic facilities maintenance of specific sites and placement of directional signs on major roads and at major intersections for certain car-top BRs. The need for evaluation and possible attention was noted for the following areas:

- The Afterbay Outlet Boat Ramp is in relatively poor condition and is typically recommended by four-wheel drive vehicles only (especially when muddy). The ramp is scheduled to be paved in 2004, which would eliminate this problem.

- Maintenance and service of portable toilets in Bloomer Cove, Group, and Knoll BICs, Foreman Creek BIC, and OWA Area G.
- Directional signs absent or in need of improvement at Dark Canyon Car-top BR, OWA Areas C, F, and G, Rabe Road Shooting Range, Stringtown Car-top BR, and Vinton Gulch Car-top BR.
- Repair is needed to the shoulders of Nelson Bar Car-top BR and Stringtown Car-top BR.
- Frequency of service of garbage facilities at Dark Canyon Car-top BR, Enterprise BR, Foreman Creek Car-top BR, Stringtown Car-top BR and Wilbur Road (Thermalito Afterbay) BR.
- Lime Saddle Marina has been severely damaged by 2003 winter storms. Repairs are the responsibility of the concessionaire; a new concession contract is being solicited/negotiated.
- The secondary gravel/dirt road to OWA Area G needs maintenance.

When Lake Oroville is at its maximum elevation (900 feet above sea level), it covers approximately 15,810 acres and has 167 miles of shoreline. As the pool level decreases during the ensuing recreation season, the use of facilities such as boat ramps, car-top boat ramps, and boat-in camps is increasingly affected. Use of some recreational facilities is prevented during low water making shoreline exploration difficult and creating other resource impacts and conflicts.

Other facility issues:

- Generally, the Bidwell Canyon facilities are available at high, medium, and low lake levels; however, several houseboaters have stated on visitor surveys that they cannot reach the gas pumps (located at the Bidwell Marina) at the lowest reservoir levels experienced in 2002 (EDAW 2002).
- Periodic vehicle access closures due to the presence of sensitive cultural resources at Foreman Creek Car-top BR and Enterprise BR.
- The OWA boat ramps are unimproved and are not in good condition. These ramps are informal sites and are not currently scheduled to be upgraded.

R-11 RECREATION AND PUBLIC USE IMPACT ASSESSMENT

This document presents the Recreation and Public Use Impact Assessment, one of several recreation studies being conducted as part of the Oroville Facilities relicensing process. This study included a qualitative assessment of ecological impacts attributed to recreation and public use at recreation sites and areas in the study area. This report summarizes the recreation and public use impacts to vegetation, soils, and water quality at Project recreation facilities.

The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to the Federal Energy Regulatory Commission (FERC) for the Oroville Facilities (FERC Project No. 2100). As part of this relicensing process, a series of related studies are being conducted to assess and evaluate recreation resources associated with the Oroville Facilities. This report presents the results of one of those studies: an evaluation of public use impact in the study area, which is defined as the area inside and within ¼ mile of the FERC Project Boundary.

This study first identifies dispersed recreation sites within the study area. Then it discusses what indicators are evaluated and what impacts they may cause. This study is needed because FERC regulations require a comprehensive recreation plan. As a part of this plan, conditions of existing recreation facilities are considered. This study compiles and analyzes field data collected in the study area related to ecological impacts at developed recreation sites and undeveloped dispersed recreation sites.

As a part of the study, the following indicators were qualitatively analyzed to evaluate potential recreation and public use impacts or concerns related to sensitive ecological resources:

- Soil erosion;
- Soil compaction;
- Fugitive dust;
- Trash accumulation;
- Sanitation;
- Vegetation damage;
- Prevalence of user-defined trails;
- Impacts to wetlands;
- Impacts to riparian zones;
- Prevalence of downed wood;
- Impacts to shoreline and water quality;
- Off-highway vehicle (OHV)-related impacts (evaluated at dispersed sites); and
- Estimated use levels (evaluated at dispersed sites).

Cultural resource impacts are not addressed in this study; impacts to cultural resources are evaluated in other relicensing studies. Those studies have identified numerous sensitive cultural resource sites in the study area.

Researchers observed study area sites and areas – walking and driving – looking for recreation and public use-related impacts. The results were recorded on assessment forms; notes relating to this qualitative assessment were also included. Two observation periods occurred, one in the summer and another in the winter.

An overall level of impact for each site and indicator was assigned based on a comparison of the two observation periods. Overall, developed recreation sites exhibited few impacts. However, the following few developed recreation sites were identified as areas of higher concern compared to others in the study area:

- Afterbay Outlet Campground and Day Use Area (DUA);
- Clay Pit State Vehicular Recreation Area (SVRA);
- Foreman Creek Car-top Boat Ramp (BR);
- Rabe Road Shooting Range; and
- Saddle Dam DUA.

The overall level of impact at dispersed recreation sites and areas was greater compared to developed recreation sites. The following dispersed recreation sites were identified as being of high concern:

- Old Nelson Bar Road Dispersed Site;
- Oroville Wildlife Area (OWA) – Headquarters Entrance Dispersed Use Area;
- OWA - Pacific Heights Road Highway 70 Entrances Dispersed Use Area;
- OWA – Palm Avenue Entrance Dispersed Use Area; and
- Ponderosa Dam Dispersed Site.

Additionally, the following indicators were identified as being of high concern at dispersed recreation sites and areas (there were no indicators identified as being of high concern at developed recreation sites or areas):

- OHV impact;
- Trash accumulation; and
- User-defined trails.

Potential management responses in the study area to commonly observed Project-wide concerns may generally include:

- Placement and servicing of trash receptacles at sites with excessive amounts of litter;

- Providing visitor education regarding low impact recreational techniques;
- Hardening of heavily used areas to reduce vegetation damage and erosion;
- Providing visitor education regarding the potential impacts of use near river and reservoir shorelines;
- Limiting the number of OHV roads or preventing OHV access in some dispersed use areas;
- Providing visitor education regarding potential OHV use impacts in sensitive ecological areas (wetland, riparian); and
- Periodically monitoring conditions over time using current data as a baseline, and adopting management responses to changes in use over time.

R-12 PROJECTED RECREATION USE

This document presents the results of Study R-12 - *Projected Recreation Use*, one of several recreation studies conducted to support the Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). This study presents unconstrained projections of potential recreation use in the study area in the future.

INTRODUCTION

This report is divided into seven sections. Section 1.0, Introduction, provides a list of the sites included within the study as well as background information on the Oroville Facilities. Section 2.0, Need for Study, addresses why the study is necessary to support relicensing. Section 3.0, Study Objectives, describes the purpose of the study. Section 4.0, Methodology, discusses the data sources used in this study as well as the procedures used in estimating projected use. Section 5.0, Results and Discussion, describes the results of the study and includes a brief summary of existing use, an explanation of several key variables which may affect future use, and quantitative projections of future use. Section 6.0, Conclusions, describes the conclusions drawn from the results regarding projected use within the study area. Section 7.0, References, lists the information sources and references used for this study.

Lake Oroville is the second-largest reservoir in California, after Shasta Lake. The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, powerplants, and pumping plants that stores and distributes water to supplement the needs of urban and agricultural water users in California. The Oroville Facilities support a variety of recreational opportunities, including several types of boating and fishing, camping, picnicking, swimming, horseback riding, hiking, bicycling, and hunting.

NEED FOR THIS STUDY

This study is needed to comply with FERC regulations, which require estimates of future daytime and overnight recreation use within the study area (Subpart F, 4.51 of 18 Code of Federal Regulations [CFR]).

STUDY OBJECTIVE

The objective of this study is to forecast the amount of recreation use in the study area for various intervals throughout the anticipated license period of the Oroville Facilities. The use projections from this report provide input into other recreation studies.

METHODOLOGY

A review of relevant literature was conducted to provide background information for this study. This information was supplemented with information from other Relicensing Studies, including Study R-14 – *Assessment of Regional Recreation and Barriers to Recreation* and Study R-9 – *Existing Recreation Use.* A panel of recreation experts also provided an assessment of recreation trends and lent professional judgment to the study.

Both qualitative and quantitative information were used to project future recreation use within the study area. Statistical models were created to determine the influence of several variables on visitation at Lake Oroville and Thermalito Forebay. Many variables were included in the model, including reservoir level, gas prices, substitute sites, and climactic conditions. Of these, reservoir level was the only variable that was shown to have a statistically significant effect on visitation at Lake Oroville. The Lake Oroville model shows that visitation is somewhat higher when the reservoir level is higher.

Because operations modeling suggested that the reservoir level in 2020 would be similar to current levels, and other variables did not exhibit statistically significant relationships to visitation at Lake Oroville, population growth was the only independent variable remaining in the model to affect future visitation. Therefore, another method was developed which primarily used projection data (Cordell 1999), along with statewide latent demand and past historical trend data to develop projected growth rates for activities prevalent within the Project area. The growth rates were then applied to the baseline use data (from Study R-9 – *Existing Recreation Use*) to calculate unconstrained projected use for each activity at each site.

The relationship that the statistical model showed between visitation and reservoir level allowed the baseline recreation data to be adjusted for the relatively low reservoir pool elevations during the year of baseline data collection (2002–2003). The model predicted that if the reservoir level had been at its 25-year average, recreation use at Lake Oroville sites would have been 9.8 percent higher. Thus, baseline data at Lake Oroville sites was adjusted upwards by 9.8 percent to better reflect average reservoir levels. Sites at other project reservoirs (Thermalito Forebay, Thermalito Afterbay, and Diversion Pool) were not adjusted, because reservoir level variation is minimal at those sites, and data were not available to support development of a statistically-valid relationship between reservoir elevation and visitation at those sites.

Although the Thermalito Forebay model indicated that some visitors chose Thermalito Forebay as a substitute for Lake Oroville when reservoir level was low, the level of significance was marginal. This indicates that visitors may substitute other areas and other activities when Lake Oroville levels are low, but predictive models could not be developed due to lack of historical data.

STUDY RESULTS AND DISCUSSION

Currently, Lake Oroville sites account for just over one-half of the total study area use. The sites with the most use include Bidwell Canyon Boat Ramp (BR)/Day Use Area (DUA)/Marina, Lime Saddle BR/DUA/Marina, Oroville Dam/Overlook DUA, and Lake Oroville Visitors Center. In terms of activity use, boating and sightseeing account for over 50 percent of total use in the study area.

Variables which may affect future use at the study area are also discussed in qualitative terms. Factors potentially affecting future recreation specifically in the study area include population changes, latent activity demand, and the possible addition of new facilities or special events in the study area. Variables which may influence regional recreation include economic factors, Statewide demand for recreation settings and activities, as well as potential latent demand for facilities (and activities that occur at those facilities) which may result from gaps in the regional supply of recreation facilities. Recreation in general may be affected by several trends identified by the expert panel and literature review, a few of which include population growth, changes in activity preferences, income, and other demographics such as population age.

These qualitative and quantitative variables, along with historical activity participation trends and activity projection data, were incorporated into quantitative projections for study area sites. These projections are unconstrained, meaning that site, facility, social, and ecological constraints are not taken into account as potential factors limiting future use. These projections are also straight-lined, meaning the same percentage growth is used for every projected year. Constraints to future use are addressed in Study R-8 – *Carrying Capacity*. Projections for each decade starting at 2010 and ending at 2050 are presented for sites at Lake Oroville, the Diversion Pool, Thermalito Forebay, Thermalito Afterbay, OWA, and additional sites within the FERC boundary, as well as selected sites outside of the FERC boundary. Projections are made in recreation days (RDs). A recreation day is equal to participation in recreation at a site during a single day by one person for any length of time.

According to the unconstrained, straight-line projection, the study area would be expected to receive about 3.5 million RDs by 2050, 97 percent of which are projected to occur within the Project 2100 boundary. This would be a 103 percent increase over 48 years. In general, sites with high amounts of sightseeing and boating use are projected to increase the most over the next 48 years (starting from 2002). Lake Oroville would be expected to remain the dominant area with more than 55 percent of total use in each decade. The OWA would be expected to remain the area contributing the second-highest amount of use with 507,000 RDs (14 percent) by 2050.

Lake Oroville would be expected to receive 2 million RDs by 2050, more than doubling existing recreation use at this area. Several individual recreation sites would be expected to double in use over the next 48 years (assuming no constraints), generally due to high boating and sightseeing use. Between 2010 and 2020, Oroville

Dam/Overlook DUA is projected to overcome Bidwell BR/DUA/Marina as the largest contributor to use. In terms of overnight use, Loafer Creek and Bidwell Canyon Campgrounds are forecasted to have the most use of the six campgrounds.

All other project areas would be expected to increase by about 60 to 100 percent or more over the next 48 years. Thermalito Afterbay is forecasted to see the most growth (98 percent) due to large amounts of boating use, where as the OWA is forecast to have the least growth (59 percent) due to lower amounts of boating and sightseeing use, along with expected declines in hunting demand. The Feather River Fish Hatchery would be expected to have visitation double by 2050. Dispersed use is projected to increase moderately compared to individual study area sites. The three sites outside of the FERC boundary would also be expected to have moderately increased use compared to other study area sites.

CONCLUSIONS

The projection of future use in the study area incorporates qualitative factors, activity demand, population growth, and reservoir level to arrive at an unconstrained projection of 3.5 million RDs in 2050. Actual future use will be affected by constraints as described in Study R-8 – *Carrying Capacity,* by unpredictable changes in future demand, and by unquantifiable variables such as those discussed in Section 5.2.3. Due to the many factors affecting visitation, periodic monitoring would be a useful tool to periodically update projections and evaluate trends. A monitoring program would standardize the collection of visitation data and outline how that data would be used to review and revise estimated future use.

R-13 RECREATION SURVEYS

This document presents the results of Study R-13 – *Recreation Surveys*, one of several recreation studies conducted by the California Department of Water Resources (DWR) to support the Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). This study presents the results of several extensive recreation surveys administered to gather recreation information useful toward evaluating recreation opportunities in the study area.

The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, powerplants, and pumping plants that stores and distributes water to supplement the needs of urban and agricultural water users in California. The Oroville Facilities support a variety of recreational opportunities, including several types of boating and fishing, camping, picnicking, swimming, horseback riding, hiking, bicycling, and hunting.

NEED FOR THIS STUDY

This study is needed to meet FERC direction regarding preparation of comprehensive recreation plans: FERC regulations state that a “well documented user survey is an essential part of a good recreation plan” (FERC 1996).

STUDY OBJECTIVE

The objectives of this study are to determine Project area recreationists’ background characteristics (visitors’ activities, trip characteristics, and socio-demographic characteristics); user preferences for facility and area development; perceptions of crowding; levels of satisfaction; reasons for visiting the area; and reasons for not visiting the area. Obtaining characteristics and recreation preferences of Northern California households and users of similar sites, especially as they relate to the study area, was also an objective of this study.

METHODOLOGY

Several surveys were administered for this study:

- A Lake Oroville Area Recreation Visitor Survey (consisting of an On-Site Survey with some optional activity-specific sections and a follow-up Mailback Survey);
- A Hunter Survey (also consisting of both an On-Site Survey and a follow-up Mailback Survey);

- A Similar Site Survey, administered at three reservoirs in Northern California deemed similar to the Lake Oroville area in terms of recreational opportunities; and
- A Household Survey, consisting of telephone interviews with residents of Butte County, as well as three other Northern California and Nevada market areas.

The purpose of the Lake Oroville Area Recreation Visitor On-Site Survey was to obtain information about visitors' pattern of past use of the study area, their current visit, and their perceptions and opinions regarding a range of conditions and factors that could affect their enjoyment. The Mailback Survey was implemented as a follow-up to the On-Site Survey and was primarily used to obtain information on visitors' recreation spending associated with their Lake Oroville area visit, and additional descriptive, perception, and opinion information.

The On-Site Survey was a self-administered survey completed by both day and overnight visitors engaged in recreation activities in the study area. Besides the general questions, there were three activity-specific sections for anglers, boaters, and trail users, which were skipped by people who were not or did not expect to fish, boat, or use trails. A version of the survey booklet intended to be left on visitors' windshields was also prepared. The Mailback Survey was similar in length to the On-Site Survey but had many multiple-part questions which were generally in "check-off" form to be less burdensome to the respondent, and more easily evaluated.

For the On-Site Survey, sampling protocols were developed to ensure representation from several major target recreational groups. The On-Site Survey was administered at 44 sites over a 12-month period starting from Memorial Day weekend, 2002 and ending after Memorial Day weekend, 2003. Four-hour sampling periods were scheduled on a monthly basis using a stratified random sampling design with stratification by day of week (weekend vs. weekday) and time of day.

Survey protocol for the On-Site Survey included surveyors approaching visitors and giving a brief introduction to the survey. With exceptions at a few sites, visitors must have been recreating at the site where they were contacted for at least 30 minutes to be included in the survey. The Mailback Survey was mailed 7 to 10 days after the original On-Site Survey contact. Butte County residents and non-residents were sent slightly different surveys to better estimate economic impacts. A total of 2,583 people completed the On-Site Survey and 1,071 people completed the Mailback Survey (some unusable surveys were discarded).

The Hunter Survey assessed hunters' use patterns, attitudes, and perceptions specific to the hunting experience, species hunted, and hunting locations. The survey was a self-administered booklet. A mail survey was also sent, for the most part identical in content to the surveys sent to non-hunter user groups. The Hunter Survey sampling

schedule was from mid-October 2002 through January 2003 and included weekends only. There were a total of 106 on-site Hunter Surveys completed and 38 mailback surveys returned.

The Similar Site Survey was administered at Black Butte Lake, Lake Berryessa, and Shasta Lake, all three of which are large, federally-managed reservoirs that offer water-based recreation opportunities similar to Lake Oroville. The purpose of this survey was to determine how visitors to other reservoirs in the Northern California region perceived conditions and rated their experiences at those sites, which could provide some means to compare similar information provided by Lake Oroville area visitors. The Similar Site Survey combined relevant aspects of the On-Site and Mailback Survey instruments in a single on-site survey booklet. Sampling occurred on at least two weekend days in July and August 2002 at each site. A total of 293 Similar Site Surveys were completed.

The Household Survey was designed to identify latent demand among Northern Californian and Reno area residents for special events and facilities in the Lake Oroville area, and to assess potential factors influencing why residents might not be visiting the Lake Oroville area. There were 100 respondents from each of four strata: Butte County, Reno area, San Francisco area, and Sacramento area.

RESULTS AND DISCUSSION

Rather than attempt to summarize the extensive and detailed results of the surveys here (as provided in Section 6.0 of this report), this section will instead describe the general benefits and areas of knowledge gained from each of the four survey efforts provided in this report.

Lake Oroville Area Recreation Visitor Survey

The Lake Oroville Area Recreation Visitor Survey was successful in obtaining a statistically valid representation of study area visitor characteristics, use patterns, opinions, perceptions, and preferences. Specifically, the data describes visitors to the study area as a whole and visitors to specific subareas (termed for this report “resource areas”) in terms of how long they stay in the area when they visit, whether they stay overnight or not, how often they visit and during what seasons, what portions of the study area they tend to use, the size and composition of the groups they visit with, and the activities they participate in while in the study area. All of these data provide a picture of the types of visitors and activities the study area serves, and an indication of what overall recreation management and development needs are required to serve them.

Specific perceptions that have been explored and are statistically represented by the survey include perceptions of crowding at specific recreation sites, perceptions of the quality or appeal of scenery at specific recreation sites, perceptions of the adequacy of

several types of recreation facilities (in terms of the number provided), and perceptions of whether several management issues and resource and social conditions were problems in the area.

Generally, visitors have little concern about crowding at most sites, and most consider the number of facilities of various types to be adequate, and most management issues to be “slight” problems, at most. However, the data reveal those facilities and management issues of most concern to certain users, and thus provide guidance for potential future actions to address these.

Another major area of information obtained relates to visitors’ specific preferences and desires related to the study area. These include preferences for different social and physical aspects of the recreation setting, and preferences for new special events and facility enhancements or additions. The data provide background information to be considered in planning future recreation enhancements, and allow for some ranking or prioritization of these potential changes, based on level of visitor interest.

A substantial amount of information specific to several key user groups was also obtained. From anglers, this includes data on frequency of angling use, use of guide services and participation in tournaments, fish species pursued and caught/released, perceptions of fishing regulations, satisfaction with their fishing experience, and reasons for dissatisfaction. From trail users, this included characterization of primary type of trail use (hike, bike, equestrian), perceptions of crowding on trails, encounters of concern with other trail users, and satisfaction with trail condition. From reservoir boaters information was obtained about the portions of the study area where they boat, encounters on the water and observation of boating activity of concern, perceptions of crowding on the water, types of watercraft used, use of boat ramps, experiences with waiting to use ramps, satisfaction with their boating experience, and reasons for dissatisfaction. As a whole, the data from these user groups indicate their satisfaction is fairly high, but their perceptions of problems or inadequacies and perceived priorities for improvements are also evident.

Finally, data were obtained on visitors’ overall satisfaction with their visits to the study area and several hundred comments were obtained from visitors about their positive and negative perceptions of the area, changes they believe are needed, and many other topics. Overall, satisfaction with visits to the Lake Oroville was high, but the survey data reveal key issues that might potentially be addressed to enhance satisfaction.

Some key comparisons of these characteristics and perceptions were made in the report, in addition to comparisons across resource areas. These include comparisons of peak season vs. non-peak season visitors, local (residents of Butte and adjacent Counties) vs. non-local visitors, and by general activity-based user groups (i.e., boaters vs. trail users vs. anglers, etc.).

Hunter Survey

The Hunter Survey provided a statistically valid (for most questions) representation of OWA hunters' overall hunting use patterns, characteristics of their hunting trip including length of stay and group size, and the species of wildlife hunted for and amount of game taken. Hunter data obtained include perceptions of crowding while hunting, access to the OWA, study area hunting regulations, adequacy of facilities, perceptions of whether several management issues and resource and social conditions were problems in the OWA, and improvements desired for hunting in the OWA. Lastly, data were obtained on hunters' level of satisfaction with hunting in the OWA and causes for dissatisfaction. Hunter satisfaction was reasonably high, but the data provide details on several specific issues that hunters would most like addressed to improve hunting.

Similar Site Survey

The Similar Site Survey provides, through what may be termed an "indicator sample" (much smaller samples than obtained in the study area in a very limited sampling period), a useful indication of the perceptions of visitors to several other northern California reservoirs of the sites and boating conditions there. This information is useful as a source of context and comparison with similar perceptions gaged at the Lake Oroville area. This Survey also collected information from users of those other reservoirs about their frequency of use and perceptions of Lake Oroville, if they had ever visited there, and their interest in special events and facility additions as potential motivations to visit the area (if they had never visited). As with the Lake Oroville Area Visitor Survey, these data allow for some ranking or prioritization of potential management actions and enhancements to the area based on level of visitor (or potential visitor) interest.

Household Survey

The Household Survey, like the Similar Site Survey, relied on samples of about 100 respondents per sampling stratum, thus the data may not provide statistically valid representation for individual questions or issues with low response rates. Nevertheless, the Household Survey data provides an indication of regional residents' use and perceptions of the Lake Oroville area. The data indicate that those who did not live in the immediate area were not frequent visitors to the area, but that the reasons for this had more to do with distance, travel time, and other water-based recreation opportunities closer to their homes rather than with perceived inadequacies or characteristics of the study area. The data further suggest that certain types of special events and facilities have more potential than others to increase visitation by these regional residents, providing additional guidance in planning and prioritizing such actions.

R-14 ASSESSMENT OF REGIONAL RECREATION AND BARRIERS TO RECREATION

The California Department of Water Resources (DWR) operates the Oroville Facilities, a multipurpose water supply, flood control, power generation, recreation, fish and wildlife enhancement, and salinity control project. The hydroelectric facilities operate under a license from the Federal Energy Regulatory Commission (FERC). The license expires on January 31, 2007. Pursuant to the Federal Power Act, DWR is required to file an application for a new license on or before January 31, 2005. Seventy-two background studies are being conducted, 19 related to recreation and socioeconomic resources, in order to assess the present and future conditions of the Oroville Facilities.

This report presents results from Relicensing Study R-14 – *Assessment of Regional Recreation and Barriers to Recreation*. This study is needed to meet the FERC's direction for preparing recreation reports during the relicensing process. FERC guidelines recommend that the licensee cooperate with local, State, and federal agencies in planning for recreational use of public lands administered by those agencies adjacent to the Project area. FERC requires that licensees develop suitable public recreational facilities with adequate public access. This is best accomplished by evaluating recreation demand in a regional context.

The objectives of this study are to evaluate regional recreational opportunities in Northern California (and adjacent Nevada) and to identify potential barriers, if any, to increasing existing and future recreational uses within the Project area.

When making decisions about where to recreate, visitors often evaluate alternative locations and opportunities within a geographic region. Therefore, understanding recreation supply and demand issues in a regional context is a critical part of identifying and possibly mitigating potential barriers arising from Project operation to increased recreational use. This study examines possible barriers and incentives to visiting the Project area and provides an assessment of regional recreational opportunities.

Supply and demand information for the Project area and the region was gathered from various sources including existing reports, which include past and current recreation visitor surveys. Regional resources were defined as similar lakes and reservoirs in Northern California. Both qualitative and quantitative data were utilized.

PROJECT AREA SUPPLY

The Project area provides numerous facilities for various recreation activities. These facilities compare favorably in development and quantity to similar projects in California (DWR 2001). There are three major campgrounds that include group camping and equestrian camping. There are also seven boat-in campgrounds (BIC) and ten floating campsites. There are 15 boat ramps, numerous day use areas (DUAs) and other

facilities such as a boat storage facility (the “Aquatic Center”), a fish hatchery, and trails. These facilities provide opportunities for diverse recreational activities.

PROJECT AREA DEMAND

In spite of an increase in population in both Butte County (Table 5.2-3) and California (Table 5.2-2), and the development of many new recreation facilities pursuant to an updated recreation plan, the best available data suggest that visitation has generally dropped slightly at the Oroville Facilities over the last three decades (Table 5.2-1).

REGIONAL SUPPLY

Twenty-two lakes and reservoirs in northern California were selected for comparison with Lake Oroville (Table 1.1-2). Table 5.3-2 summarizes jurisdiction, surface area, miles of shoreline, facilities, and lake elevation for each of the selected regional lakes and reservoirs.

REGIONAL DEMAND

Existing and projected future demand for each of the selected regional sites is summarized in Table 5.3-4. Visitation is expected to increase by varying degrees at the following sites:

- Antelope Lake;
- Black Butte Reservoir;
- Bucks Lake;
- Butt Valley Reservoir;
- Clear Lake;
- East Park Reservoir;
- Englebright Lake;
- Lake Almanor;
- Lake Berryessa;
- Lake Pillsbury;
- Lake Tahoe;
- Shasta Lake;
- Little Grass Valley Reservoir;
- Stony Gorge Reservoir; and
- Trinity Lake.

Visitation is not expected to increase at the following sites:

- Bullard’s Bar Reservoir;
- Folsom Lake;
- Frenchman Lake;
- Indian Valley Reservoir;
- Lake Davis;
- Lake Spaulding; and
- Whiskeytown Lake.

The most visited lake, based on Household Survey (conducted as part of Relicensing Study R-13 – *Recreation Surveys*) respondents, was Lake Tahoe (which 61.8 percent of respondents had visited) while Lake Oroville ranked fifth (31.5 percent) among the 37 regional lakes, reservoirs and rivers (Table 5.3-5). Demand for setting types was nearly equal between natural areas (45.8 percent) and developed areas (42.8 percent) among the Household Survey respondents (Table 5.2-6).

Recreationists at three similar sites—Lake Berryessa, Shasta Lake, and Black Butte Lake—were surveyed for their preferences, experiences, and barriers to visiting Lake Oroville. Among Black Butte Lake, Lake Berryessa and Lake Oroville, ease of access was the most frequent reason (43 percent to 49 percent) visitors chose the reservoir at which they were surveyed. Quality of experience (19 percent) and ease of access (18 percent) were the top two reasons visitors gave for choosing Shasta Lake.

On a four-point scale of “not a problem” to “a big problem,” visitors were asked to rate various conditions at each of the similar sites and at Lake Oroville. Visitors cited water level-related issues at Shasta Lake and Lake Oroville as “slight problems” (Table 5.5-7).

Of those surveyed at the three similar sites, 49 percent of Black Butte visitors, 80 percent of Lake Berryessa visitors, and 68 percent of Shasta Lake visitors had never been to Lake Oroville.

VISITATION, SATISFACTION, AND RECREATION ATTENDANCE FACTORS

Several categories of potential barriers and incentives to visiting Lake Oroville were identified based on survey data, literature review, expert consultation, and Relicensing Work Group meetings. These categories include factors regarding proximity and access, information, conditions at the lake, facilities, special events, and visitor experience.

Proximity and Access. Since one of the main reasons for visiting lakes and reservoirs (based on the Similar Site Survey) is proximity to home, the ability of Lake Oroville to attract many new visitors may be somewhat limited due to its geographic location in relation to population centers. Lake Oroville is accessible by three State highways.

Information. Lack of information was one of the top two reasons that respondents to the Household and Similar Sites Surveys have not visited the Lake Oroville area. Information regarding recreation facilities at the Lake Oroville Facilities is available on the Internet at both DPR and DWR websites.

Conditions. Lake level, weather, and scenery are conditions that affect visitor satisfaction:

- Lake Oroville was rated nearly equivalent to the other lakes in the Similar Site Survey in scenic appeal (Table 5.4-9);
- Of the 2.4 percent of Household Survey respondents who were dissatisfied with their last visit to Lake Oroville, 44.4 percent gave “low lake level” as the cause (Table 5.5-7); and
- Of the 11.3 percent of boaters who were dissatisfied with their last boating experience, 46.1 percent gave “lake level” as the reason.

Facilities. The majority of visitors are satisfied with the existing facilities at Lake Oroville, but some preferences exist for new facilities such as more swimming areas and new attractions such as a floating restaurant or water park. Survey respondents gave a variety of answers as to what would motivate them to visit Lake Oroville for the first time, or more frequently if they had visited before. Written responses indicate that visitors would like better or more access to the water’s edge for swimming, boating, and fishing (Section 5.6.5).

Special Events. While some current visitation can be attributed to existing special events, new special events are not expected to attract a large number of new visitors. For example, according to the Household Survey, approximately 62 percent of water-based recreationists in the region who had never been to Lake Oroville stated that a special event would not motivate them to visit Lake Oroville for the first time (Table 5.5-18). However, special events may be an opportunity to disseminate information about other recreational opportunities in the Lake Oroville area.

CONCLUSIONS

There are numerous recreation activities and facilities available within the Project area, many of which are similar to those available at the other regional lakes and reservoirs included in the study. Lake Oroville offers several uncommon recreation opportunities such as boat-in camping, equestrian camping, and a designated OHV area. Within the Project area, there appears to be some unmet or latent demand for swimming and beach areas. Visitation is expected to increase at most of the regional lakes and reservoirs, and therefore, demand for recreational facilities, activities and opportunities will increase as well.

Comparing the three reservoirs included in the Similar Site Survey and Lake Oroville, proximity, resource conditions, and good facilities/maintenance were the top three reasons given for visiting each lake. Generally, survey respondents were satisfied with their last visit to the Lake Oroville area. Dissatisfied respondents felt that poor or not enough facilities, access issues and lake level were the cause of their dissatisfaction.

The most significant factors that may prevent people from visiting the Lake Oroville area include proximity (especially distance from home to the lake), lack of information, and low lake level. Facilities and special events do not appear to be factors which would

motivate many respondents to visit the Lake Oroville area more often or for the first time. Recommendations to help overcome these potential barriers include disseminating more information outside of Butte County about the Lake Oroville area, which highlights the unique opportunities provided at Lake Oroville.

R-15 RECREATION SUITABILITY ANALYSIS

This document presents the results of the Recreation Suitability Analysis, one of several recreation studies that were conducted for the Oroville Facilities relicensing. This study provides an analysis of recreation site development suitability using geographic information system (GIS)-based technology to identify and assess areas of opportunity and constraint for potential recreation development in the study area. Composite GIS suitability maps were developed to visually display areas with the potential for new public recreation facility development if it is determined that they are needed.

Federal Energy Regulatory Commission (FERC) regulations require a comprehensive recreation plan. This study is being conducted in support of this plan. The study identifies areas potentially suitable for new recreation site development that may be used to help meet the recreation needs of visitors to the study area.

The objective of this study is to determine areas suitable for potential new recreation facility development, if needed, consistent with the resource opportunities and constraints of the area. For potential recreation facility development, two objectives were considered when preparing this study. One objective was to provide a range of recreation experiences for visitors, both developed and dispersed; the other objective was to protect the Project's sensitive resources. Both of these objectives were considered when selecting opportunity and constraint values to be compared and contrasted.

Opportunity values that were considered included physical, biological, and legal property characteristics that are favorable for potential future recreation development. Examples of opportunity values include proximity to the shoreline and proximity to existing roads so that infrastructure needs be minimized. Constraint values that were considered included characteristics that are not favorable for recreation development, such as extreme slopes and proximity to areas with sensitive species. Through this process, opportunity and constraint characteristics were classified into low, moderate, and high subcategories.

A composite map was developed that incorporates both opportunity and constraint characteristics. By combining these characteristics, areas of high, moderate, and low general suitability were depicted. The resulting composite suitability map depicts potentially suitable sites (or polygons) that may be considered for future recreation development if needed. Areas of high suitability may include areas of infill and expansion of existing recreation sites, as well as new undeveloped sites. For example, highly suitable potential recreation development areas are those where high opportunities and low or no constraints exist, whereas less suitable recreation areas are those where greater constraints or no opportunities exist. The composite suitability maps do not contain the mapped results of the cultural resource inventory (Relicensing Study C-1 – Cultural Resources Inventory); however, a map depicting the density of archaeological sites is included in Appendix A. Therefore, certain areas that appear

highly suitable on the composite suitability maps may potentially have cultural resource concerns. Before planning and developing new recreation sites, including infill and expansion of existing sites, a thorough archaeological survey may need to occur.

The following lands comprise the most potentially-suitable locations that were identified in this study for consideration of a new recreation development, if needed, in the study area. These sites will require further on-site verification and extensive environmental review prior to any definitive project planning.

- Lands near Lime Saddle Boat Ramp (BR) and Lime Saddle Campground;
- Lands near the Bloomer Area Boat-in Campsites (BIC);
- Lands near Spillway Day Use Area (DUA) and BR and Oroville Dam Overlook DUAs;
- Lands adjacent to the Loafer Creek and Bidwell Canyon facilities;
- A thin strip of land near the Bald Rock Canyon access;
- A large inland area to the east of Craig Area BIC;
- Lands near the west end of the Diversion Pool, close to the Lakeland Boulevard trail access;
- Lands adjacent to the North and South Thermalito Forebay recreation facilities;
- Lands on the north side of the Thermalito Afterbay;
- Lands near the Oroville Wildlife Area (OWA) Headquarters entrance;
- Lands surrounding the Rabe Road Shooting Range and Clay Pit State Vehicular Recreation Area (SVRA);
- Lands along the west side of the Feather River in the OWA; and
- Land in the vicinity of Riverbend Park.

R-16 WHITEWATER AND RIVER BOATING REPORT

This study is needed to help meet the Federal Energy Regulatory Commission's (FERC) direction to include information on existing recreation uses at project facilities and water in the license application (Chapter 1, Subpart F, Section 4.51 of 18 Code of Federal Regulations [CFR]).

The objectives of this study are to describe whitewater and river boating activities on the Feather River within the study area, to examine effects of Project operations on boating activities, to evaluate solutions to any identified whitewater and river boating issues, and ultimately to provide useful information for planning recreational experiences for appropriate water-related activities.

In this report, the Feather River is analyzed in two reaches, the upper reach and the lower reach. This report describes a reach of the North Fork Feather River terminating within the Project boundary, and makes comparisons with similar runs throughout the area, State, and region (Section 5.1). Section 5.2 describes the lower reach, the lower reach user group, and issues identified for this reach. Section 5.3 briefly discusses resources and access constraints identified on the Middle Fork of the Feather River. A stakeholder-proposed whitewater park is discussed in Section 5.4. Section 6.0 addresses whitewater and river boating-related issues, and concerns, and possible actions that could be taken to address these concerns.

On the North Fork Feather River, the run is used mainly by local people and only when the reservoir lowers to an elevation where they feel enough whitewater is exposed to make the run worth boating. This run is comparable to other runs in the area, State, and Western United States. A lack of flow information and difficult accessibility are the primary issues affecting use of the upper reach. Possible actions proposed by stakeholders to address these concerns include providing flow information and running a water shuttle on weekends to provide easier and faster take-out access.

On the lower reach (Feather River from Oroville Dam to Gridley), river boating is popular with both motorized and non-motorized boaters. Reported river boating issues include access, flow rates, fishing regulations, and lack of facilities. Possible actions to address these concerns include improving launch access, increasing flow, increasing California Department of Fish and Game (DFG) patrols, adding more toilet and trash facilities, and providing better maps and information on the location of boat ramps, access roads, and other facilities along the Feather River.

One stakeholder proposal for future recreation in the Oroville area is the development of a "whitewater park." A whitewater focus group convened for this study generated preliminary ideas for potential whitewater park features, usage, and possible locations.

R-17 RECREATION NEEDS ANALYSIS

The California Department of Water Resources (DWR) operates the Oroville Facilities, a multipurpose water supply, flood control, power generation, recreation, fish and wildlife enhancement, and salinity control project. The hydroelectric facilities operate under a license from the Federal Energy Regulatory Commission (FERC). The license expires on January 31, 2007. Pursuant to the Federal Power Act, DWR is required to file an application for a new license on or before January 31, 2005. DWR commissioned this study as part of a collaborative relicensing process for the preparation of a license application to be submitted to FERC for the Oroville Facilities (FERC Project No. 2100). Seventy-two background studies have been or are being conducted, 19 of which are related to recreation and recreation-related socioeconomics. This document presents the results of Relicensing Study R-17: *Recreation Needs Analysis*. The report is needed because FERC regulations require that licensees develop a comprehensive recreation plan for their facilities during the relicensing process (Subpart F, Section 4.51 of 18 Code of Federal Regulations [CFR]).

The *Recreation Needs Analysis* contributes to the development of a new recreation plan for the Oroville Facilities area, or Oroville Facilities Recreation Management Plan (RMP). This capstone study synthesizes the major results of the other technical resource recreation studies completed during the relicensing process. It should be noted that the recreation needs noted in this study may or may not be in the Oroville Facilities RMP that will be submitted to the FERC with the final license application. This is because various options for satisfying some of the identified recreation needs may require further exploration as to their best fit, feasibility, and cost effectiveness.

Typical public recreation needs may be related to items such as: providing adequate public heath and safety, compliance with the Americans with Disabilities Act (ADA), protecting natural and cultural resources in recreation areas, providing adequate public access to Project lands and shorelines, and providing and maintaining adequate public recreation facilities and use areas. For the purposes of FERC relicensing, a public recreation need is typically related to Project operations, the Project water bodies and is water-related. A public recreation need is also typically within or immediately adjacent to the FERC boundary.

Potential recreation resource actions that are aimed at enhancing economic development in the area or region, or in meeting recreation needs originating outside the Oroville Facilities area, are not considered recreation needs in this study and are not included in the results.

The objective of this study is to develop a comprehensive list of both overall and site-specific public recreation-related needs in the Oroville Facilities study area. The report identifies and estimates existing and future public recreation facilities and services that are likely to be needed in the study area through the term of the anticipated new license.

Several FERC relicensing studies were reviewed and used to define public recreation needs in the study area:

- SP-R-1-Vehicular Access Study;
- SP-R-2-Recreation Safety Assessment;
- SP-R-3-Assess Relationship of Project Operations and Recreation;
- SP-R-4-Relationship assessment of Fish/Wildlife Management and Recreation;
- SP-R-5-Recreation Areas Management Assessment;
- SP-R-6-ADA Accessibility Assessment;
- SP-R-7-Reservoir Boating;
- SP-R-8-Recreation Carrying Capacity;
- SP-R-9-Exisiting Recreation Use;
- SP-R-10-Recreation Facility and Condition Inventory;
- SP-R-11-Recreation and Public Use Impact Assessment;
- SP-R-12-Projected Recreation Use;
- SP-R-13-Recreation Surveys;
- SP-R-14-Assess Regional Recreation and Barriers to Recreation;
- SP-R-15-Recreation Sustainability Study;
- SP-R-16-Whitewater and River Boating;
- SP-R-18-Recreation Activity and Spending/Economic Impacts (selected data);
- SP-R-19 – Fiscal Impacts (selected data);
- SP-L-1 – Land Use (selected data);
- SP-L-2 – Land Management (selected data);
- SP-W-3 – Recreation Facilities and Operations Effect on Water Quality (selected data); and
- Terrestrial and Cultural Studies (selected data in GIS-based suitability analysis).

Results from this study are intended to synthesize and help address Issue Statements identified by the Recreation and Socioeconomics Work Group (RSWG):

- Assess the adequacy of existing Project recreation facilities, opportunities, and access to accommodate current use and future demand;
- Assess the adequacy of public safety at the study area recreational facilities;
- Assess the effects of facilities operations on recreation and socioeconomic opportunities;
- Assess the adequacy of operations and maintenance (O&M) and clean-up activities associated with existing and new recreation areas;
- Identify options for appropriate recreation funding, development, and management structure, and the resulting specific recreation activities; and

- Identify options for appropriate management of fisheries and wildlife resources to provide recreational opportunities.

The study area for this analysis is divided into six resource areas: Lake Oroville, Diversion Pool, Low Flow Channel, Thermalito Forebay, Oroville Wildlife Area (OWA), and Thermalito Afterbay.

To identify public recreation needs in the study area, a two-step process was used:

- Analyze other relicensing study results and conclusions to identify and synthesize results regarding overall "big picture" public recreation needs in the study area and options to accomplish those needs; and
- Based on these overall recreation needs, identify conclusions about specific public recreation needs (sometimes with options) on a site-by-site basis based on the overall needs in the study area.

Existing public recreation needs were identified and potential future recreation needs projected over the anticipated term of the new license. Existing needs are defined as priority needs and would be addressed during the current timeframe through 2010. Potential future needs are defined as lower priority needs and are projected out by future decade (2011 to 2020, 2021 to 2030, etc.) based on when the need is anticipated to occur, but subject to the results of a future recreation monitoring program.

Four types of recreation needs have been defined in this study:

- Capital improvements;
- Operations and maintenance (O&M);
- Programmatic; and
- Other considerations.

A capital improvement need is a one-time expense that may include actions such as renovating, upgrading, or expanding an existing facility, or constructing a new facility. An O&M need includes items that are ongoing or periodic such as trash pick-up, cleaning of restrooms, etc. Other considerations are potential actions that would enhance the public's recreational experience in the study area, but are considered lesser priority needs. A programmatic need includes monitoring use levels, opportunities for periodic stakeholder input, clarifying recreation management responsibilities, etc.

SUMMARY OF OVERALL RECREATION NEEDS BY ACTIVITY TYPE

Several different types of public recreation activities were considered in the analysis including:

- Camping (at developed and dispersed undeveloped shoreline sites);
- Day use/picnicking (at developed and dispersed undeveloped shoreline sites);
- Boating;
- Swimming and sunbathing;
- Interpretation and education (I&E) (including programs and signs);
- Non-motorized trail use (including hiking, walking, mountain biking, and equestrian);
- Fishing (boat and bank); and
- General use of open space (including hunting, wildlife observation and photography, birding, and other dispersed activities).

A complete list of the overall recreation-related needs by activity type is summarized in Table 5.2-1 in this report. Recreation needs by site are further defined and summarized in Table 6.1-1 in this report. The latter table is also included in this Report Summary at the end (Table RS-1).

Camping

Regarding camping, estimates of projected (future) use at developed campgrounds in the Lake Oroville resource area indicate that most sites will be at or exceeding their facility capacity prior to the end of the new anticipated license term (assumed to be 2050 for planning purposes). While existing camping capacity appears adequate and facilities are well-maintained, development of new developed campsites is a management option that should be considered to help address the anticipated need for additional camping capacity in the future. By 2050, it is estimated that approximately 75-100 new campsites may be needed (based on future monitoring results) in the Lake Oroville resource area to meet demand for camping based on current projections. Primary areas to consider for camping include the Loafer Creek and Lime Saddle recreation areas. At undeveloped dispersed campsites in the study area, site hardening, increased visitor education, and increased enforcement and management presence should be considered to minimize recreation-related impacts to resources and to enhance visitor safety. Dispersed camping problems are primarily at the OWA.

Day Use and Picnicking

Day use recreation facilities are generally in good condition throughout the study area. However, the eastern portion of Lake Oroville lacks existing day use and picnicking facilities. Developed day use facilities with shoreline access are desired, though in limited supply at Lake Oroville. Several sites may be improved to enhance day use opportunities in this area. At the Diversion Pool, no day use facilities exist except for a vault toilet building. Additional day use facilities in this area are needed including access from Lakeland Boulevard. The Thermalito Forebay and Afterbay provide day

use facilities and are in generally good condition. These facilities provide substitute shoreline day use access when the pool level is low at Lake Oroville; however, they are remote from Lake Oroville. Some facility enhancements are proposed in these areas.

Boating

Boating facilities are numerous and are generally in good condition at Lake Oroville. These facilities are well distributed throughout the study area, except for the North Fork and the Middle Fork of Lake Oroville where road access is minimal. Boating facilities are generally concentrated in areas close to main access routes and the city of Oroville. Demand for boating is projected to continue to increase over the anticipated term of the new license. Boating activity is also strongly affected by changes in reservoir pool level at Lake Oroville and can vary by water year, affecting access at some boat ramps and car-top boat ramp sites. Multi-level ramps have been constructed to facilitate use at different water-levels, and several boat ramps have recently been extended to provide access at lower pool levels. Management considerations related to future boating improvements and management include providing additional parking and further extending ramp lanes at some Lake Oroville boat ramps, reducing allowed boat speeds at Thermalito Afterbay, and providing improved car-top boat launching at the Diversion Pool.

Swimming and Sunbathing

Swimming and sunbathing opportunities are provided at Lake Oroville and the Thermalito Forebay and Afterbay. Pool level fluctuations at Lake Oroville make swim areas, in particular Loafer Creek, unusable at certain times of the year or in a low water year. Thermalito Forebay and Afterbay provide swimming opportunities throughout all of the summer months as their pool levels are more stable. Various options exist to enhance swimming opportunities at the Project such as providing new swimming facilities at the Loafer Creek and/or potentially Lime Saddle recreation areas that would not be affected by reservoir drawdown. Additionally, improvements at some car-top boat ramps could be made to enhance swimming opportunities at these sites. Another consideration is to assess the feasibility of providing warmer water swimming at the North Thermalito Forebay. Finally, options may be considered to preserve water quality and reduce summer bacteria levels at certain swim areas in the study area.

Interpretation and Education

I&E-related facilities and programs, such as informational kiosks, signage, information dissemination, and interpretive trails or campfires, have the potential to enhance visitor experiences and help modify visitor behavior to increase human safety and protect natural and cultural resources. An overall I&E program is proposed that would address issues such as options for a visitors center, programs for disseminating information,

directing visitors to appropriate facilities, educating visitors about cultural resource protection, and others.

Non-motorized Trails

The study area has a significant amount of multi-use, non-motorized trails. Most trails are in good condition and user conflicts are low. However, some trail loop connections are missing, and trail access could be improved in some locations. A Comprehensive Non-Motorized Trails Program is proposed to address the entire trails network. It would explore the possibility of developing new trails and looking at trail use zoning, among others.

Fishing

Fishing (boat and bank) is a very popular activity in the study area as many opportunities exist at the Project reservoirs and along the Low Flow Channel and greater Feather River. Public safety issues at peak fishing periods have been noted, particularly in the OWA, requiring additional management presence and/or law enforcement during peak use periods. Other fishing-related enhancements proposed include additional signage, trash pickup, shoreline access sites, fish cleaning stations, and ADA-compliant fishing piers or platforms. Many of the boating-related improvements will also enhance fishing opportunities.

General Open Space Activities

The study area contains a significant amount of undeveloped public open space that is mostly available for general public use. However, steep slopes are common in the Lake Oroville area and generally limit public access to a smaller area. In addition to providing open space-dependent recreation opportunities, such as wildlife observation and hunting, open space areas provide habitat for many wildlife species. As the population continues to increase over time, these public areas become more important and should be preserved. A few needs were identified related to hunting, including opening some locked gates earlier to provide improved access to the OWA during hunting season, providing additional law enforcement, and improved litter pickup, primarily at the OWA. Additionally, OHV use was noted where not allowed or appropriate. As a result, certain sensitive areas should be barricaded to minimize OHV use, while OHV riding opportunities continue to be provided at the Clay Pit SVRA (the SVRA is outside the FERC boundary).

SUMMARY OF RECREATION NEEDS FOR CAPITAL IMPROVEMENTS, OPERATIONS AND MAINTENANCE, AND PROGRAMMATIC ACTIONS

Below is a brief summary of the public recreation needs for the Oroville Facilities area that were identified in this study. A more detailed list of facility capital improvements, ongoing O&M, and programmatic recreation-related needs by site is summarized in Table 6.1-1 of this report and is also included in this Report Summary at the end (Table RS-1).

Recreation Facility Capital Improvement Needs

- Continue to provide ADA-compliant facilities at developed recreation sites through the anticipated new license term. Modify as needed over the term of the new license as ADA guidelines are amended.

- Harden some existing dispersed use sites to minimize resource impacts and to provide additional visitor access. Monitor user impacts over the term of the anticipated new license and harden or close some sites as necessary.

- Enhance existing boat ramps (specifically at Lake Oroville) by extending ramp lanes where and when feasible, providing additional parking when needed, improving car-top boat ramps, and installing additional boarding docks at specific sites, among other actions.

- Continue to restore the Lime Saddle Marina facility that was damaged by a wind storm, working with DPR and the concessionaire.

- If feasible and cost-effective, provide or improve swimming opportunities at Lake Oroville and North Thermalito Forebay. Consider cost-effective and feasible options to meet this need.

- As part of a proposed I&E Program, provide various program elements including kiosks, signs, and information dissemination.

- As part of a proposed Comprehensive Non-Motorized Trails Program, improve trail-related opportunities such as new trail loop connections, improved trail access at some locations, and trailheads.

- Where feasible, provide additional shoreline fishing-related facilities including improved and/or new shoreline access sites and additional regulatory and informational signs.

- Maintain existing public undeveloped open space land for hunting, wildlife observation, and other dispersed activities. Provide adequate public access to these public lands.

- Where feasible and cost-effective, consider clustering of and connections between developed recreation facilities (e.g., picnic areas, trails, campgrounds, group camps, boat ramps, etc.) to provide increased synergy among recreation opportunities and to enhance visitor satisfaction.

- Provide additional camping capacity (approximately 75-100 new campsites) at Lake Oroville recreation areas over the anticipated term of the new license when the need is demonstrated by a proposed monitoring program. Provide additional group campsites when needed as well.

Recreation Operations and Maintenance and Programmatic Needs

- Continue to provide adequate O&M at developed recreation sites and use areas through the new license term.

- Periodically monitor recreational use, visitor perceptions, and resource impacts through the anticipated new license term, to determine when existing sites should be improved or enhanced, when new sites should be constructed, or when resource impacts require mitigation.

- Obtain and provide real-time information on river flow and reservoir pool levels in the Oroville Facilities area.

- Provide additional visitor management and law enforcement presence, especially in the OWA and during specific seasons of use (e.g., fishing and hunting seasons).

- Clarify and adequately fund state agency recreation-related management responsibilities through the term of the anticipated new license.

- Provide opportunities for periodic stakeholder input regarding the management of recreation resources over the term of the anticipated new license.

- Develop and implement additional measures related to managing resource impacts (e.g., OHV use impacts, litter accumulation and dumping, dispersed use impacts, etc.) and enhancing visitor safety (e.g., incident and accident reporting, visitor management control, wildland fire evacuation, etc.).

R18 - RECREATION ACTIVITY, SPENDING, AND ASSOCIATED ECONOMIC IMPACTS

This document presents the results of the Relicensing Study R-18 – *Recreation Activity, Spending, and Associated Economic Impacts*, one of two socioeconomic studies conducted to support the Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to FERC for the Oroville Facilities.

As part of the relicensing process, a series of related studies is being conducted to gather information on project-related recreation activities associated with the Oroville Facilities. This report presents the results of one of those studies: to estimate existing and projected future economic effects from project-related recreation and operations and maintenance activities on communities in Butte County. This report was prepared under the general direction of DWR staff. Opinions, findings, and conclusions expressed in this report are those of the authors. This report does not express the official position of DWR unless specifically approved by the Director or his designee.

INTRODUCTION

This *Recreation Activity, Spending, and Associated Economic Impacts* study focuses on characterizing existing spending by persons recreating at the Oroville Facilities and expenditures made by State agencies for operations and maintenance (O&M) of the Oroville Facilities, and estimating current employment opportunities and earnings supported by recreation- and O&M-related spending in Butte County. Additionally, this study estimates future changes in employment and earnings resulting from changes in recreation activity and related spending caused by projected growth in visitation to the Oroville Facilities. Economic effects are evaluated at the community and County (Butte County) level. The study area includes communities in close proximity to the Oroville Facilities, including the greater Oroville area; the cities of Gridley, Biggs, and Chico; and the Town of Paradise. For this analysis, these communities are grouped into four economic model areas: Oroville Model Area, Chico Model Area, Biggs-Gridley Model Area, and Paradise Model Area.

NEED FOR THIS STUDY

DWR is currently in the process of renewing its license for the Oroville Facilities. FERC is responsible for granting the license and requires the applicant, DWR, to assess various resources, including recreation and socioeconomic resources. This study complies with FERC direction for preparing socioeconomic exhibits. Specifically, FERC guidelines direct that “estimates should be provided for changes in employment and income associated with any anticipated modifications to recreation use in the Study Area, such as whitewater rafting, boating, or fishing.” Because this study focuses on

local economic effects of recreation activity at the Oroville Facilities, the study also will help DWR meet FERC's direction regarding preparation of a comprehensive recreation plan.

STUDY OBJECTIVES

The primary objective of the *Recreation Activity, Spending, and Associated Economic Impacts* study is to estimate the effects of spending activity generated by current and projected recreation use and O&M of the Oroville Facilities on local business sales, employment, and personal income. A secondary objective of the study is to gain a better understanding of the relationship between the Oroville Facilities and economic development and growth within the region, particularly focused on the greater Oroville area. This understanding establishes an analytical framework for evaluating effective recreation development strategies for potentially enhancing economic conditions in the region.

METHODOLOGY

To estimate the effects of spending generated by current and projected recreation use and O&M of the Oroville Facilities, community-level economic impact assessment models were developed for four community areas: the Oroville Model Area, the Chico Model Area, the Paradise Model Area, and the Biggs-Gridley Model Area. The models, which were developed in consultation with a Socioeconomics Technical Review Team for Oroville Facilities Relicensing, were constructed employing basic economic modeling data at the County level available from the Minnesota IMPLAN Group (Minnesota IMPLAN Group 2002). These economic modeling data were verified and modified using additional economic information gathered at the local level. Current and projected future levels of recreation-related sales and current levels of O&M expenditures related to the Oroville Facilities were input to the models to generate estimates of total sales, employment, and earnings in each of the model areas. Model inputs were developed using data on visitation levels, visitation patterns, and expenditures gathered through recreation user surveys conducted for the relicensing process.

STUDY RESULTS AND DISCUSSION

Effects of Current Recreation Activity and O&M Expenditures

Local Project-related economic effects primarily result from recreation activity and O&M of the Oroville Facilities. As recreation-related spending levels vary in relation to use, local employment and earnings generated by miscellaneous retail sales, hotel and motel stays, fuel purchases, and other expenditures by visitors also change. Similarly, changes in O&M expenditures by State agencies also generate economic activity in local areas. Based on current visitation levels, visitor spending is estimated to range from about $1.4 million in the Biggs-Gridley Model Area to about $20.4 million in the

Oroville Model Area (Table RS-1). Countywide, spending associated with current recreation activity at the Oroville Facilities is estimated to total $30.7 million annually, with $11.9 million being spent by recreationists who reside outside of Butte County.

Table RS-1. Summary of current recreation-related spending in Butte County by County residents and out-of-County visitors to the Oroville Facilities.

Study Impact Area	Butte County Residents		Out-of-County Visitors		Total Spending ($1,000)
	Amount ($1,000)	% of Total	Amount ($1,000)	% of Total	
Oroville	10,163.8	54.1	10,265.9	86.3	20,429.7
Paradise	4,182.7	22.3	634.2	5.3	4,817.0
Biggs-Gridley	761.9	4.1	597.0	5.0	1,358.9
Chico	3,674.3	19.6	392.4	3.3	4,066.6
Butte County Total	18,782.7	100.1	11,889.5	99.9	30,672.2

Note: Spending by Butte County residents in each community includes spending by residents of that community and spending by other Butte County residents (i.e., nonlocal residents) in that community.

Existing activities and patterns of use related to the Oroville Facilities result in differing economic effects on communities in Butte County. As expected, the largest economic effects are in the Oroville Model Area, where most of the Oroville Facilities are located and where many of the State employees who operate and maintain the facilities reside. Spending associated with recreation activity at the Oroville Facilities by out-of-area visitors currently generates an estimated 453 jobs, while O&M expenditures generate an additional 319 jobs in the Oroville Model Area (Table RS-2). Current earnings from recreation activity-related spending and O&M expenditures are estimated to total $8.6 million and $10.6 million, respectively, in the Oroville Model Area.

RS-2. Summary of jobs and earnings effects generated by recreation-related spending and operation and maintenance of the Oroville Facilities.

Study Impact Area	Recreation Spending Induced				Operation and Maintenance Induced			
	Jobs		Earnings		Jobs		Earnings	
	Number of Jobs	% of Total	Amount ($1,000	% of Total	Number of Jobs	% of Total	Amount ($1,000)	% of Total
Oroville	453	68.4	8,598.3	67.0	319	64.1	10,600.4	69.9
Paradise	37	5.6	725.7	5.7	37	7.4	1,138.3	7.5
Biggs-Gridley	22	3.3	364.4	2.8	17	3.4	505.5	3.3
Chico	150	22.7	3,144.6	24.5	125	25.1	2,927.3	19.3
Butte County Total	662	100.0	12,833.0	100.0	498	100.0	15,171.5	100.0

Note: Effects on jobs and earnings generated by recreation spending reflect spending in community areas by all persons who live outside the community, including persons who live elsewhere in Butte County and who live outside of Butte County.

Existing economic effects in the Chico Model Area, which benefits by being a regional retail and services center, are estimated to include 150 jobs generated by recreation-related spending of visitors and 125 jobs related to O&M expenditures. Earnings

related to these jobs are estimated to total $6.1 million. Economic effects of recreation activity-related spending by visitors and O&M expenditures are estimated to be 74 jobs in the Paradise Model Area and 39 jobs in the Biggs-Gridley Model Area. Earnings in the Paradise and Biggs-Gridley areas generated by recreation activity-related spending and O&M expenditures are estimated to total about $1.9 million and $870,000, respectively.

Countywide, the spending by persons who recreate at the Oroville Facilities but who do not reside in Butte County currently generates an estimated 555 jobs and $10.6 million in annual earnings. O&M activities are estimated to generate an additional 498 jobs and $15.2 million in annual earnings within the County.

Effects of Projected Future Recreation Activity

Based on projected growth in visitation to the Oroville Facilities developed for Relicensing Study R-12 – *Projected Recreation Use*, spending by all visitors to the facilities is projected to total $38.8 million in 2020, including $15.0 million in spending by visitors coming from outside of Butte County. Similar to current spending patterns, 66 percent of Countywide spending associated with recreation activity at the Oroville Facilities is estimated to occur within the Oroville Model Area in 2020. Within Butte County, economic activity supported by the spending of out-of-County visitors is estimated to generate about 700 jobs and $13.4 million in earnings in 2020, reflecting a 26 percent increase in economic activity relative to current activity levels. Jobs and earnings associated with recreation activity at the Oroville Facilities would continue to be greatest in the Oroville Model Area, with 571 jobs estimated to be generated by out-of-area visitor spending in 2020.

CONCLUSIONS

Effects of Current Recreation Activity and O&M Expenditures

The *Recreation Activity, Spending, and Associated Economic Impacts* study reveals that recreation activity and O&M expenditures related to the Oroville Facilities contribute varying amounts to the economic bases of communities in Butte County. As expected, recreation- and O&M-related activity contributes the most to the economy of the Oroville Model Area. Combined, recreation and O&M activities account for an estimated 772 jobs in the Oroville Model Area, or 4.2 percent of the area's total employment. Earnings associated with these activities ($19.2 million) account for 4.7 percent of the Oroville Model Area's total earnings.

Current levels of recreation activity and O&M expenditures have relatively smaller effects on the economies in the Chico, Paradise, and Biggs-Gridley Model Areas. Although out-of-area visitor spending and O&M expenditures annually support about 275 jobs and $6.1 million in earnings in the Chico Model Area, this level of economic

activity accounts for less than 1 percent of total jobs and earnings in the area. Similarly, the number of jobs and earnings in the Paradise and Biggs-Gridley Model Areas generated by recreation activity of out-of-area visitors and O&M expenditures account for less than 1.0 percent of all jobs and earnings in these areas.

Countywide, current levels of recreation activity and O&M related to the Oroville Facilities contribute a relatively small but important increment to the County's economic base. Combined, spending by out-of-area visitors and O&M-related expenditures account for an estimated 1,160 jobs and about $28.0 million in annual earnings. When viewed in the context of the Butte County economy, these levels of employment and earnings account for about 1.2 percent of total Countywide employment and about 1.3 percent of total Countywide earnings. Recreation activity-related spending by local residents also supports jobs and earnings in local businesses that rely on this spending.

Effects of Projected Future Recreation Activity

Countywide, jobs and earnings generated by recreation activity at the Oroville Facilities by out-of-area visitors is estimated to increase by 26 percent between 2003 and 2020, which is less than the projected increase in population growth in Butte County. Assuming that the economies of the community modeling areas within Butte County grow at rates similar to the projected population growth by 2020, the economic effects generated by out-of-area visitor spending would account for a smaller share of the economies of each area. Currently, spending by out-of-area visitors account for about 4.2 percent of the jobs in the Oroville Model Area and less than one percent of the jobs in the Paradise Model Area, Chico Model Area, and the Biggs-Gridley Model Area. Countywide, out-of-area spending accounts for about 1.2 percent of the jobs in the County.

R19 - FISCAL IMPACTS

This document presents the results of the Relicensing Study R-19 – *Fiscal Impacts*, one of two socioeconomic studies conducted to support the Oroville Facilities Relicensing (Federal Energy Regulatory Commission [FERC] Project No. 2100). The California Department of Water Resources (DWR) commissioned this study as part of the relicensing process for the preparation of a license application to be submitted to FERC for the Oroville Facilities.

As part of the relicensing process, a series of related studies is being conducted to gather information on project-related recreation activities associated with the Oroville Facilities. This report presents the results of one of those studies: to estimate existing and projected future fiscal impacts of Project-related recreation activity and operation and maintenance (O&M) expenditures on local governments in Butte County. This report was prepared under the general direction of DWR staff. Opinions, findings, and conclusions expressed in this report are those of the authors. This report does not express the official position of DWR unless specifically approved by the Director or his designee.

INTRODUCTION

This *Fiscal Impacts* study focuses on characterizing existing fiscal conditions, estimating current local public revenues and costs associated with recreation and O&M of the Oroville Facilities, and projecting future changes in revenues and costs resulting from changes in recreation use and spending caused by projected growth in visitation to the Oroville Facilities. Fiscal conditions are evaluated for six jurisdictions: the Cities of Oroville, Paradise, Gridley, Biggs, and Chico, and the County of Butte. Conditions and effects on other jurisdictions and special districts, other than the Feather River Recreation and Parks District (FRRPD), are not evaluated because fiscal effects of relicensing on these agencies would be minimal.

NEED FOR THIS STUDY

DWR is currently in the process of renewing its license for the Oroville Facilities. FERC is responsible for granting the license and requires the applicant, DWR, to assess various resources, including recreation and socioeconomic resources. This study complies with FERC direction for preparing socioeconomic exhibits. Specifically, FERC guidelines direct that a socioeconomic assessment should include a “local government fiscal impact analysis.” Because this study focuses on local fiscal impacts of recreation activity and O&M at the Oroville Facilities, the study also will help DWR meet FERC’s direction regarding preparation of a comprehensive recreation plan.

STUDY OBJECTIVES

The primary objective of the *Fiscal Impacts* study is to estimate the effects of economic activity generated by current and projected recreation use and by the O&M of the Oroville Facilities on sales tax revenues, lodging tax revenues, and other tax revenues of local governments, and on local public service costs related to Project-related recreation activity and O&M of the Oroville Facilities. A secondary objective of the study is to gain a better understanding of the relationship between the level of recreation activity at the Oroville Facilities and resulting levels of public revenues and costs generated for local agencies. This understanding establishes an analytical framework for evaluating effective recreation development strategies for potentially enhancing fiscal conditions for local government.

METHODOLOGY

Public cost and revenue effects were estimated based on information gathered through interviews with service providers, budget data for each affected jurisdiction, current tax rates, visitation data for the Oroville Facilities, and population data.

The general approach to assessing the fiscal effects of current and future recreation activity and O&M expenditures associated with the Oroville Facilities was to focus the analysis on the costs, revenues, and jurisdictions most affected by these activities and expenditures. The approach was developed in coordination with a Socioeconomics Technical Review Team for Oroville Facilities Relicensing. From a local government perspective, the largest fiscal impacts related to the Oroville Facilities result directly from providing services to recreation visitors to Lake Oroville and related recreational sites and facilities. For this analysis, these effects are referred to as visitor-driven effects. Indirect fiscal effects on local governments also result from the economic growth and subsequent employment and population growth spurred by recreation activity and related spending and by O&M expenditures. These effects are referred to as indirect (growth-related) impacts.

To determine the jurisdictional focus of the analysis, recreation use data from the recreation user survey conducted for the Relicensing Study R-13 – *Recreation Surveys* was evaluated to determine where most of the recreation visitor activity, including recreation use and spending, occurs within Butte County. As expected, the data showed that most activity takes place in the Oroville area. Only a small portion of the activity occurs in the incorporated communities of Biggs, Chico, Gridley, and Paradise. More emphasis, therefore, was placed on assessing fiscal impacts on the City of Oroville, and in unincorporated Butte County where the facilities are located, than on the other jurisdictions.

Fiscal impacts were evaluated using fiscal models developed specifically for this study and these six jurisdictions. The fiscal impact assessment models are components of the Economic-Fiscal Model, which consists of four community-level models that are

linked in a County-level inter-community spreadsheet model with capabilities to estimate the economic and fiscal effects of recreation, construction, and O&M activity at the Oroville Facilities. The four community areas modeled were Oroville, Paradise, Biggs/Gridley, and Chico. Together, these four community areas, which include lands within the incorporated area and surrounding lands in the unincorporated area, comprise all of the land area of Butte County. The fiscal models were designed to estimate fiscal effects in the incorporated and unincorporated jurisdictions in each community modeling area.

STUDY RESULTS AND DISCUSSION

Local fiscal effects primarily result from recreation activity and O&M of the Oroville Facilities. As recreation-related spending levels vary in relation to use, local tax revenues generated by miscellaneous retail sales, hotel and motel stays, fuel purchases, and other expenditures by visitors to the Oroville Facilities also change. Similarly, changes in visitation to the Oroville Facilities also generate increased demand for law enforcement, fire protection, and other governmental services, such as road maintenance. Other Project-related fiscal effects, such as enhanced property values resulting from flood protection provided by the Project, are not evaluated.

Effects of Current Recreation Activity and O&M Expenditures

Existing recreation and O&M activities related to the Oroville Facilities result in differing fiscal impacts on local government in Butte County. For the County of Butte, non-residents of unincorporated Butte County who recreated at the Oroville Facilities in FY 2002-03 directly generated an estimated $369,900 in public services expenditures and $220,400 in revenues, resulting in an annual deficit to the County of an estimated $149,500 (Table RS-1). This deficit represents 0.1 percent of the County's FY 2002-03 general fund budget and less than 0.1 percent of the County's overall budget. Indirect costs attributable to the population supported by visitor spending and related economic activity exceeded revenues by an estimated $240,100. O&M activities generated an additional deficit estimated at $114,200 (Table RS-2).

Taken together, the total deficit ($503,800) resulting from recreation (direct and indirect) and O&M activities represents 0.4 percent of the County's FY 2002-03 general fund budget and 0.2 percent of the County's overall budget. This estimated deficit, however, likely overstates the actual deficit for the County because intergovernmental revenues associated with the population supported by visitor spending and O&M of the Oroville Facilities are underestimated in the analysis.

For the City of Oroville, non-resident visitors directly incurred an estimated $207,900 in public services expenditures and generated $531,900 in revenues in FY 2002-03, resulting in a surplus of $324,000 (Table RS-1). Indirect costs to the City of Oroville exceeded revenues by an estimated $167,800. O&M activities result in an estimated

deficit of $86,800 annually for the City of Oroville (Table RS-2). The net surplus ($69,400) to the City of Oroville resulting from both existing recreation (direct and indirect) and O&M activities, which represents approximately 0.9% of Oroville's FY 2002-03 general fund budget, understates the actual surplus because of likely higher revenues from intergovernmental transfers.

Table RS-1. Summary of estimated current visitor-driven fiscal impacts on the County of Butte and Butte County cities of recreation at the Oroville Facilities.

Jurisdiction	Revenues ($1,000)	Expenditures ($1,000)	Net Visitor-Driven Fiscal Impact ($1,000)
County of Butte	$220.4	$369.9	-$149.5
Oroville	$531.9	$207.9	$324.0
Paradise	$24.3	$21.8	$2.3
Gridley	$19.9	$8.3	$11.6
Biggs	$0.4	$0.8	-$0.4
Chico	$44.8	$61.9	-$17.1

Table RS-2. Summary of estimated current fiscal impacts on the County of Butte and Butte County cities of O&M of the Oroville Facilities.

Jurisdiction	Revenues ($1,000)	Expenditures ($1,000)	Net O&M Fiscal Impact ($1,000)
County of Butte	$331.1	$447.3	-$114.2
Oroville	$111.5	$198.3	-$86.8
Paradise	$17.4	$27.2	-$9.8
Gridley	$2.7	$8.3	-$5.6
Biggs	$0.4	$0.7	-$0.3
Chico	$27.5	$51.7	-$24.2

For Biggs, Chico, Gridley, and Paradise, visitor-driven effects are relatively minor, with public services expenditures in FY 2002-03 ranging from an estimated $800 for Biggs to $61,900 for Chico, and revenues ranging from $400 for Biggs to $44,800 for Chico (Table RS-1). Similar to Butte County and the City of Oroville, the net fiscal impact of O&M of the Oroville Facilities is negative for Biggs, Chico, Gridley, and Paradise (Table RS-2). The overall net fiscal impacts on Biggs, Chico, Gridley, and Paradise are uncertain because indirect (growth-related) expenditure and revenue effects were not evaluated.

For the FRRPD, service and program costs for the population generated by visitor and O&M expenditures are estimated to exceed revenues by $25,000.

Effects of Projected Future Recreation Activity

For the County of Butte, the fiscal impact analysis reveals that public service expenditures generated by projected recreation activity at the Oroville Facilities in 2020

would exceed revenues, directly resulting in an annual deficit projected at $189,600. Indirect costs of providing public services to the population supported by visitor spending also are projected to exceed revenues by $303,200. For the City of Oroville, visitor-driven revenues are projected to exceed costs by $409,200. Indirect costs to the City of Oroville, however, are projected to exceed revenues by $212,000. Fiscal effects on the Cities of Biggs, Chico, Gridley, and Paradise are estimated to be relatively small under projected future (2020) conditions.

Under projected future (2020) conditions, the population supported by visitor spending and subsequent economic activity generated by the spending would create an increased demand for services from the FRRPD. This increased service area population is projected to result in an annual deficit of $21,200 to the FRRPD in 2020.

CONCLUSIONS

Effects of Current Recreation Activity and O&M Expenditures

The *Fiscal Impact* analysis indicates that current recreation activity and O&M of the Oroville Facilities generates an annual deficit for the County of Butte and an annual surplus for the City of Oroville. This outcome is largely a result of differences in sales for the two jurisdictions of taxable goods and services to visitors of the Oroville Facilities. Most of the retail businesses and motels near the Oroville Facilities are located in Oroville, allowing the City to capture a large percentage of total visitor sales. This, in turn, generates substantial sales and lodging tax revenues for the City of Oroville, which the County of Butte does not receive. Visitor-driven sales and lodging tax revenues generated by recreation activity at the Oroville Facilities are estimated to be almost two-and-a-half times larger for the City of Oroville than for the County of Butte. Conversely, public services costs are estimated to be higher for Butte County than for the City of Oroville.

For both jurisdictions, the resident population indirectly attributable to visitor spending and O&M activities is estimated to generate public services costs greater than public revenues. This may be explained by the generally accepted notion in California that, in a fiscal sense, residential development does not pay for itself; commercial and industrial development is usually needed to provide revenues to offset the costs of serving the resident population. The fiscal models do not account for all of the beneficial fiscal effects that may be secondarily related to the population supported by visitor and O&M spending. The model results may, therefore, present a somewhat unbalanced view of indirect effects, overstating the indirect deficit resulting from visitor and O&M activities. Additionally, partially funded State mandates for providing certain services and programs to the population indirectly attributable to visitor and O&M spending adds to the overall deficit, particularly for the County. For O&M activities, deficits are exacerbated because O&M spending generates relatively small amounts of sales tax revenue for Butte County and the City of Oroville.

It should be noted that the fiscal impact assessment models for the City of Oroville and Butte County hold State and Federal revenues constant for most intergovernmental transfers. This modeling constraint likely results in the model understating revenue transfers attributable to the portion of the County population indirectly supported by recreation visitor (and O&M) spending. Sensitivity analysis conducted to evaluate this potential modeling limitation found that allowing only 5 percent of Federal revenue transfers and 20 percent of State revenue transfers to be population sensitive would balance the indirect effects of the use and O&M of the Oroville Facilities.

For Biggs, Chico, Gridley, and Paradise, the visitor-driven fiscal effects of existing activities are predicted to be small, and no substantial beneficial or adverse fiscal effects appear to be caused by existing recreation use or O&M activities related to the Oroville Facilities.

For the FRRPD, the estimated $25,000 deficit generated by indirect (growth-related) effects probably reflects the reality facing the District that much of its current operation is being funded by State funds and carryover funds. Additionally, charges for programs and services provided by the District do not fully offset the costs of these programs and services.

Effects of Projected Future Recreation Activity

For the County of Butte, the fiscal impact analysis reveals that public service expenditures generated by projected future recreation activity at the Oroville Facilities in 2020 would exceed revenues. The projected deficit would be 26 percent larger than the estimated deficit under current conditions. Under projected future conditions, the overall annual fiscal impact on the City of Oroville of recreation activity at the Oroville Facilities is projected to be beneficial, with the surplus projected to be about 26 percent larger than under current use conditions. These changes in fiscal conditions to Butte County and the City of Oroville, as compared to current conditions, reflect the corresponding change in recreation activity at the Oroville Facilities projected for 2020. The fiscal effects on the Cities of Biggs, Chico, Gridley, and Paradise of projected future use of the Oroville Facilities in 2020 are estimated to be larger than under current conditions but would still be relatively minor.