

## **APPENDIX H**

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### **LIST OF PROPOSED PLANS AND PROGRAMS**

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## **APPENDIX H LIST OF PROPOSED PLANS AND PROGRAMS**

A variety of plans and programs are included in the No-Action Alternative, the Proposed Action, and Alternative 2, and are briefly described in Chapter 3.0. This appendix provides a more detailed description of each plan and program.

### **H.1 EXISTING PLANS AND PROGRAMS INCLUDED IN THE NO-ACTION ALTERNATIVE**

The following plans and programs are included in the No-Action Alternative:

- Salmonid Monitoring and Tagging Program;
- Warm Water Fish Habitat Enhancement Program;
- Cold Water Fish Stocking Program;
- Wood Duck Box Volunteer Program;
- Habitat Enhancement Program (managed by the California Department of Fish and Game [DFG]);
- Oroville Wildlife Area Management Plan;
- Bald Eagle Territory Management Plans;
- Sediment Trapping Program;
- Water Quality Monitoring Program; and
- Mosquito Abatement Program.

These plans and programs are described in the subsections below.

#### **H.1.1 Salmonid Monitoring and Tagging Program**

The current Salmonid Monitoring and Tagging Program being operated by the California Department of Water Resources (DWR) under the existing license consists of a marking/tagging program for anadromous fish produced and released by the Feather River Fish Hatchery. Tagging programs, which are essential to evaluating the effectiveness and impacts of fish hatchery operations, rely on coded wire tags and fin clips. The program is as follows:

- 100 percent of spring-run Chinook salmon are fin clipped and tagged with coded wire tags;

- 100 percent of steelhead are fin clipped, but none are tagged with coded wire tags; and
- Approximately 5 percent of fall-run Chinook salmon are fin clipped and tagged with coded wire tags.

The program is currently subject to ongoing annual reviews by an interagency advisory committee and subject to a written review every 5 years.

### **H.1.2 Warm Water Fish Habitat Enhancement Program**

The Warm Water Fish Habitat Enhancement Program is an ongoing program that began in 1993 with the submittal to the Federal Energy Regulatory Commission (FERC) of DWR's Recreation Management Plan (RMP). The program was initially referred to in the RMP as a Fish Habitat Improvement Plan. The current program is operated by DWR under a September 22, 1994, FERC order. During the 1980s, DFG and the California Department of Parks and Recreation (DPR), along with several fishing organizations, constructed reefs made of discarded tires and placed them in several coves around Lake Oroville. The tire reefs have since been removed and replaced with reefs constructed from recycled Christmas trees, weighted pipes, riprap, large woody debris, and boulders. The program is designed to increase and/or improve the structural complexity of habitat in the Lake Oroville fluctuation zone to benefit warmwater fish such as black bass and channel catfish.

### **H.1.3 Cold Water Fish Stocking Program**

The Cold Water Fish Stocking Program was initially part of the 1993 RMP submittal to FERC and DWR's Fish Habitat Improvement Plan and it is operated under the terms of the September 22, 1994, FERC order. The FERC order required DWR to stock Chinook salmon in Lake Oroville and conduct studies to develop optimum stocking rates for the reservoir. In early 2000, DWR was asked to suspend these fish stocking activities because of concerns about fish disease. DWR has since located additional sources of disease-free salmonids to stock in Lake Oroville. On February 27, 2004 FERC issued an additional order requiring DWR to confer with DFG, National Oceanic and Atmospheric Administration (NOAA) Fisheries, the U.S. Fish and Wildlife Service (USFWS), and other regulatory agencies as well as local public governmental and nongovernmental organizations to develop a Cold Water Fish Stocking Plan for each year through the end of the existing FERC license.

### **H.1.4 Wood Duck Box Volunteer Program**

The California Waterfowl Association in cooperation with DWR, DFG, and other stakeholders have worked cooperatively over the last 15 years to increase waterfowl production within the project area, primarily on Thermalito Afterbay. Under the existing Wood Duck Box Volunteer Program, DFG and DWR provide funding for the wood duck/wildlife nest box materials and the California Waterfowl Association provides monitoring and maintenance. The goal of this program is to enhance nesting use and wood duck/wildlife production within portions of the Oroville Facilities.

### **H.1.5 Habitat Enhancement Program**

DFG conducts a regular habitat enhancement program in the Oroville Wildlife Area (OWA) that includes planting upland nesting cover and foraging vegetation for waterfowl, along with thinning/removal of vegetation around the Thermalito Afterbay brood ponds and dredging ponds within the OWA. The thinning/removal activities provide improved access for waterfowl. Approximately 200 acres of land are tilled and planted each year and remain as suitable nesting/foraging habitat for approximately 5 years before beginning to revert to the existing grasses. In addition, DFG thins and removes vegetation in and around ponds and rock piles to provide recreational access to the various habitats.

### **H.1.6 Oroville Wildlife Area Management Plan**

The OWA was established in 1968 and the management of approximately 5,500 acres of the Oroville borrow area was transferred from DWR to DFG. The OWA Management Plan was prepared in 1978 with the stated purpose of providing “for the preservation and enhancement of the fish and wildlife resources of the OWA and for reasonable use and enjoyment by the public” (DFG 1978). Additional management direction regarding the OWA was instituted in 1985, including a provision that requires DFG to consult and coordinate activities with DWR and another provision that allows DWR to use the OWA for construction, repairs, operation, and maintenance associated with the water project. DWR transferred an easement to DFG on January 24, 1986 for management of the Thermalito Afterbay water surface and adjoining lands as a wildlife area and access for management responsibilities. DFG prepared a Management Plan for the Thermalito Afterbay Unit of the Oroville Wildlife Area in 1978. Currently, the OWA Management Plan does not address any specific measures relating to State and federally listed threatened or endangered species.

### **H.1.7 Bald Eagle Territory Management Plans**

The development of Bald Eagle Territory Management Plans is included as a conservation measure recommended by USFWS for early implementation (pre-license issuance) as part of the Draft BA and therefore, is included in the No-Action Alternative. DWR in consultation with USFWS, would design a Bald Eagle Territory Management Plan for each active nesting territory that would include conservation measures to protect nesting bald eagles within the FERC project boundary. The program would mandate seasonal recreational closures of land and shoreline associated with active bald eagle nest territories.

### **H.1.8 Sediment Trapping Program**

The development of a Sediment Trapping Program is included as a conservation measure recommended by USFWS for early implementation (pre-license issuance) as part of the Draft BA and therefore, is included in the No-Action Alternative. This program would be developed for all proposed future engineering, maintenance, or other potential land disturbing activities. The program would be intended to reduce and/or prevent

sedimentation from entering into vernal pool habitat using various measures (e.g., gravel traps, rock, silt fencing, silt screening, hay bales, wattles, coconut mats, etc.).

### **H.1.9 Water Quality Monitoring Program**

SWP water quality monitoring by the Division of Operation and Maintenance for various inorganic, organic and biological parameters has occurred regularly since 1968. Current water quality parameters monitored in Lake Oroville, Thermalito Forebay and Thermalito Afterbay would continue under the new license for all alternatives. Nutrients are monitored twice a year, in April and November at Oroville Dam. Aluminum, barium, cadmium, mercury, silver, chlorinated organics, organo-phosphorus pesticides, herbicides, carbamates and other pesticides are monitored quarterly at Thermalito Forebay. At Thermalito Afterbay, nutrients are monitored twice a year while aluminum, barium, cadmium, mercury and silver are monitored monthly and bromide and suspended solids are monitored quarterly.

### **H.1.10 Mosquito Abatement Program**

DWR contributes funding to an ongoing mosquito abatement program that is supported by DFG and operated by the local mosquito abatement district. DFG does not directly conduct mosquito abatement programs within the OWA, but its annual operating budget includes up to \$40,000 per year (including up to \$20,000 that is contributed by DWR) that is paid to the local mosquito abatement district. The program consists of spraying pesticides in amounts and locations determined appropriate by abatement program staff.

## **H.2 PLANS AND PROGRAMS INCLUDED IN THE PROPOSED ACTION AND ALTERNATIVE 2**

### **H.2.1 Environmental Plans and Programs**

The following environmental plans and programs are included in either the Proposed Action and/or Alternative 2:

- Gravel Supplementation and Improvement Program;
- Large Woody Debris Supplementation and Improvement Program;
- Feather River Fish Hatchery Adaptive Management Program;
- Salmonid Monitoring and Tagging Program;
- Invasive Plant Species Management Plan; and
- Oroville Wildlife Area Wildlife Box Development Program.

These plans and programs are described in the subsections below.

### ***H.2.1.1 Gravel Supplementation and Improvement Program***

The Gravel Supplementation and Improvement Program would be designed to adaptively manage the lower Feather River to improve habitat conditions for anadromous fishes, with a specific goal to provide improved spawning and rearing habitat for spring-run Chinook salmon and steelhead. The primary location for this program would be the Low Flow Channel below the Fish Barrier Dam and the upper portion of the High Flow Channel above River Mile 49. The program would consist of an initial phase of gravel placement at selected riffles in the Low Flow Channel and the upper High Flow Channel, as well as riffle ripping and/or raking in areas where riffles have become too coarse (armored). The gravels would be placed directly at riffles that have been determined during the field studies to be lacking in suitable gravels (both quality and quantity). Selected sections of certain riffles where the gravels have become too armored for fish to successfully spawn would be ripped or raked to remove the upper armored layer, which would allow fish to access more suitable gravels below. The second phase of the Gravel Supplementation and Improvement Program would be to stage suitable size gravels along the banks of the upper reaches of the Low Flow Channel below the Fish Barrier Dam, and allow high-flow releases from Oroville Dam to naturally distribute the gravels downstream. The program would be adaptively managed based on monitoring and evaluation of results achieved by each of the enhancement strategies as well as changing distribution of need and opportunity for spawning gravel condition improvement.

### ***H.2.1.2 Large Woody Debris Supplementation and Improvement Program***

The Large Woody Debris Supplementation and Improvement Program would be designed to manage the lower Feather River to improve habitat conditions for anadromous fishes, particularly spring-run Chinook salmon and steelhead. The primary location for this program would be the Low Flow Channel between the Fish Barrier Dam and the Thermalito Afterbay Outlet. Large woody debris, boulders, and other objects would be added to the lower Feather River between the Fish Barrier Dam and the Thermalito Afterbay Outlet to increase salmonid rearing habitat by creating additional instream cover, edge, and channel complexity. Large woody debris consists of large-diameter trees (greater than 12 inches in diameter) with an attached root wad. This program could be designed to work in concert with the Gravel Supplementation and Improvement Program to improve salmonid spawning habitat and create zones of differential scour and deposition. Placements of large woody debris usually consist of single logs, groups of logs, or combinations of logs and boulders that are anchored or cabled together. Large woody debris may be anchored to banks with cable or between natural or artificially placed rocks. Logs are sometimes buried in banks to increase their stability. Consideration could also be given to placing unanchored wood that would be redistributed by streamflow. However, use of unanchored wood might be less acceptable because of potential effects on navigability and public safety. The location, distribution and strategies for large woody debris placements would be adaptively managed to improve the potential biological benefits for the target fish species and life stages and the program would be continued as needed to achieve habitat improvement goals, through the period of the license.

### ***H.2.1.3 Feather River Fish Hatchery Adaptive Management Program (HAMP)***

This program would be designed to provide a framework for ongoing evaluation of and improvements to operations of the Feather River Fish Hatchery. Feather River Fish Hatchery practices would be adaptively managed to enhance benefits and minimize negative impacts of hatchery operations. The evaluation of hatchery practices would begin with a rigorous review of management and production goals. In addition, this review would include an assessment of:

- Release strategies (including timing, size at release, and release location);
- Straying impacts;
- Marking/monitoring program design and effectiveness;
- Interactions with wild fishes;
- Diseases within and propagated by the hatchery; and
- Rearing practices, including exposing hatchery fish to natural conditions (e.g., adding cover and predators to hatchery raceways).

An adaptive approach is appropriate because the goals of the Feather River Fish Hatchery are likely to change over time and because of uncertainty regarding necessary changes in hatchery operations. A long-term, adaptive approach is also sensible given that it will take several generations of fish life cycles to observe the effectiveness of hatchery management actions.

### ***H.2.1.4 Salmonid Monitoring and Tagging Program***

The existing marking/tagging program would be expanded in Alternative 2 to include all anadromous fish produced and released by the Feather River Fish Hatchery. Tagging programs are essential to evaluating the effectiveness and impacts of hatchery operations. The Feather River Fish Hatchery tagging program would rely on coded wire tags, otolith thermal marks, fin clips, and/or passive integrated tags. The specific attributes of the tagging program would be guided by:

- The constant fractional marking program currently being developed by DFG (via CALFED Bay-Delta Program contractors);
- Feather River Fish Hatchery objectives and issues identified through the Feather River Fish Hatchery Adaptive Management Program;
- The need for statistically reliable estimates of contributions of the Feather River Fish Hatchery to ocean/inland fisheries, out-of-basin straying, and spawning populations;

- The need for visual identification of steelhead and spring-run Chinook originating from the hatchery; and
- The need for statistically reliable estimates of proportions of wild, natural origin salmon and steelhead.

This program would continue as long as the Feather River Fish Hatchery is producing anadromous salmonids. The program would be subject to ongoing review by annual meetings of an interagency advisory committee, and would be subject to a thorough written review and critique every 5 years.

#### ***H.2.1.5 Invasive Plant Species Management Plan***

An Invasive Plant Species Management Plan would be developed and implemented by DWR to reduce populations of invasive non-native plant species within the FERC project boundary, focusing on the Thermalito Complex, the OWA, selected lands around Lake Oroville, and areas along the Low Flow Channel. The goal would be to reduce populations, where possible, of specific invasive non-native plant species and replace them with appropriate native plants. The plan would be developed to manage purple loosestrife (*Lythrum salicaria*), giant reed (*Arundo donax*), tree of heaven (*Ailanthus altissima*), scarlet wisteria (*Sesbania punicea*), parrot feather (*Myriophyllum aquaticum*), and Himalayan blackberry (*Rubus discolor*). The plan would also consider management of native and non-native aquatic primrose (*Ludwigia peploides*) within OWA ponds and methods for reducing populations of yellow starthistle (*Centaurea solstitialis*) along trails and project facilities.

The Invasive Plant Species Management Plan would also consider management of invasive species around Lake Oroville, including Spanish broom (*Spartium junceum*), French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), and skeleton weed (*Chondrilla juncea*). The plan would cite specific areas/acreage and methods for treatment. DWR would coordinate development of the plan with appropriate land management agencies (i.e., the U.S. Forest Service, U.S. Bureau of Land Management, DFG, and DPR).

#### **H.2.1.6 Oroville Wildlife Area Wildlife Box Development Program**

The OWA Wildlife Box Development Program would continue the existing program and include installation and maintenance of approximately 100 wood duck/wildlife nesting boxes within the OWA. The objective of this measure is to enhance nesting use and wood duck/wildlife production within portions of the project area. Large areas of potentially suitable wood duck/wildlife brooding habitat exist within the project area; however, these areas frequently lack trees or snags of adequate size to allow nesting use by this secondary cavity nester. DWR, DFG, and the California Waterfowl Association have worked cooperatively over the last 15 years to increase waterfowl production within the project area, primarily on Thermalito Afterbay.

## **H.2.2 Recreation Plans and Programs**

The following recreation plans and programs are included in the Proposed Action and Alternative 2:

- Recreation Management Plan, including:
  - Trails Program
  - Interpretation and Education Program
  - Recreation Monitoring Program
- Wildland Fire Evacuation Plan

These plans and programs are described below.

### ***H.2.2.1 Recreation Management Plan***

A draft RMP for the term of the new FERC license has been developed based on findings of the *Recreation Needs Analysis* (SP-R17). The RMP focuses on water- and reservoir-based recreation resources within the FERC project boundary that are under the authority of DWR as the licensee of the Oroville Facilities.

The RMP is designed to guide and facilitate the management of existing and future recreation resources and to clarify the role of DPR, DFG, the California Department of Boating and Waterways, and other entities with responsibility for managing, maintaining, and developing recreational resources within the FERC project boundary. The RMP includes measures to address continued operations and maintenance (O&M) activities at existing and new recreation sites, periodic recreation monitoring through the term of the new license (Recreation Monitoring Program), identification of additional measures to be undertaken should use triggers be met, and compliance with Americans with Disabilities Act requirements and other applicable regulations. The RMP would also include the development and implementation of a Recreation Monitoring Program, a Trails Program, and an Interpretation and Education Program. Each of these is described briefly below.

### **Trails Program**

The trails program, as described in the RMP, includes a range of actions designed to expand trails to new areas, providing crossings and more loop trails, and trail support facilities. Additionally to make optimum use of existing opportunities while maintaining a safe and pleasant experience for trail users, the Trails Program proposes trail use designation changes to allow bicyclists and equestrians access to additional trails.

### **Interpretation and Education Program**

The Interpretation and Education Program as described in the RMP, defines how environmental, cultural, and informational interpretation and education would be coordinated and conducted by DWR at the Oroville Facilities. This program involves several resource areas including recreation, aesthetics/visual, fisheries, water quality, terrestrial, geology, and cultural/historical resources. The basis for the Interpretation and Education Program is DWR's and DPR's extensive existing resources including coordination of existing Lake Oroville Visitors Center programs and staff with new and existing programs administered by DWR's Office of Water Education and DPR's Interpretation and Education Division.

### **Recreation Monitoring Program**

The Recreation Monitoring Program would describe an adaptive approach to recreation resource monitoring and explain how the monitoring information would be used in decision-making. This program would identify monitoring standards and indicators, monitoring needs, periodic monitoring and reporting responsibilities, and a decision-making framework related to O&M activities and when new facility construction would be triggered or initiated.

#### ***H.2.2.2 Wildland Fire Evacuation Plan***

A fire evacuation plan would be developed for OWA recreational users as recommended in the Recreation Needs Analysis. Special attention would be paid to the Thermalito Afterbay Outlet area, as a significant portion of the OWA recreational use occurs there. The complexity of the existing road network within the OWA, as well as the level of dispersed use in this area, suggest the need for clearly communicating available evacuation routes to the public. Alternatively, closing the OWA to public use during periods of high or extreme fire hazard would be considered.

### **H.2.3 Cultural Plans and Programs**

The following cultural plans and programs are included in the Proposed Action and Alternative 2:

- Site Stewardship Program
- Historic Properties Management Plan, including:
  - Program for Future Archaeological Inventory
  - Program for Future Resource Evaluations
  - Public Interpretation Program (Signage Program)

These plans and programs are described below.

### ***H.2.3.1 Site Stewardship Program***

This program would provide site stewards who would monitor locations adversely affected by looters who remove significant archeological resources.

### ***H.2.3.2 Historic Properties Management Plan***

DWR will submit to FERC a draft Historic Properties Management Plan (HPMP) developed in consultation with the appropriate agencies and federally recognized Indian tribes and in compliance with Section 106 of the National Historic Preservation Act. The HPMP will be an integral component of the licensee's overall management of the lands within the FERC project boundary, and include measures to address ongoing effects, protocols for future actions (inadvertent discoveries, emergency situations), responsibilities and reporting requirements, and an implementation schedule. Programs within the HPMP will include:

- Program for Future Archaeological Inventory;
- Program for Future Resource Evaluations; and
- Public Interpretation Program (Signage Program).

## **H.2.4 Land Use Programs**

A Fuel Load Management Plan is included in Alternative 2, as described below.

### ***H.2.4.1 Fuel Load Management Plan***

DWR would develop and implement a Fuel Load Management Plan to reduce fuels on project lands, such as the vicinity of the wildland/urban interface and the Oroville Wildlife Area. DWR would coordinate plan development with the appropriate federal, State, and local organizations.

## **H.3 REFERENCES CITED**

DFG (California Department of Fish and Game). 1978. Oroville Wildlife Area Management Plan. Sacramento, California.