Placer County Water Agency
Middle Fork American River Project
(FERC Project No. 2079)

DRAFT
BALD EAGLE MANAGEMENT PLAN

Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604

October 2010

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List of Acronyms

ac-ft	acre-feet
APLIC	Avian Power Line Interaction Committee
BEMP	Bald Eagle Management Plan
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
Commission	Federal Energy Regulatory Commission
ENF	Eldorado National Forest
ETP	Environmental Training Program
FERC	Federal Energy Regulatory Commission
FSS	Forest Service Sensitive
Licensee	Placer County Water Agency
MFAR	Middle Fork American River
MFP	Middle Fork American River Project
MW	megawatts
NFAR	North Fork American River
NGO	non-governmental organization
OHWM	Ordinary High Water Mark
PAD	Pre-Application Document
PCWA	Placer County Water Agency
Plan	Bald Eagle Management Plan
Project	Middle Fork American River Project
SD	Supporting Document
State Water Board	State Water Resource Control Board
TNF	Tahoe National Forest
USDA-FS	United States Department of Agriculture-Forest Service
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

This Bald Eagle Management Plan (BEMP) has been developed for the Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP or Project) located on the west slope of the Sierra Nevada range primarily within Placer County, California. The MFP is almost entirely in the Tahoe National Forest (TNF) and the Eldorado National Forest (ENF), with a small portion on PCWA-owned property. The MFP consists of two major storage reservoirs—French Meadows and Hell Hole (with a combined capacity of 342,583 acre-feet [ac-ft]), five smaller regulating reservoirs and diversion pools, and five powerhouses. The Project began operations in 1967 and has a generating capacity of approximately 224 megawatts (MW). The Project also includes 21 developed recreation facilities concentrated near its storage reservoirs and diversion pools.

The BEMP was developed during the relicensing of the MFP in consultation with United States Fish and Wildlife Service (USFWS), United States Department of Agriculture-Forest Service (USDA-FS), State Water Resource Control Board (State Water Board), California Department of Fish and Game (CDFG), non-governmental organizations (NGO), and members of the public. The BEMP was approved by USFWS on January 21, 2010.

Although USFWS announced the federal delisting of bald eagles on June 28, 2007, bald eagles are still protected under several existing federal laws including the Bald and Golden Eagle Protection Act and the National Migratory Bird Treaty Act. Bald eagles are also considered a Forest Service Sensitive (FSS) species by USDA-FS. Furthermore, bald eagles are protected by the State of California as a fully protected species (Fish and Game Code §3511) and as an endangered species under the California Endangered Species Act (CESA). Therefore, development of this BEMP is required to demonstrate measures for avoidance of adverse impacts to fully protected raptor species, compliance with the USFWS National Bald Eagle Management Guidelines (USFWS 2007) and to facilitate issuance of necessary permits.

The BEMP includes a description of the presence of bald eagles in the MFP, including nest, winter roost, and documented occurrences; a summary of the nature, frequency, and location of routine maintenance activities and Project-related recreation in areas where bald eagles nests and winter roosts have been recorded; and measures to protect bald eagles from potential Project-related effects over the license term. The BEMP also addresses the potential for new bald eagle territories or nests to be identified in the Project area over the term of the new license.

2.0 PLAN OBJECTIVE

The objective of the Bald Eagle Management Plan is to define appropriate measures to protect bald eagles during routine Project maintenance activities and from Project-related recreation during term of the new MFP license. The BEMP also provides measures to reduce the risk of potential bald eagle electrocutions at Project powerlines.

Periodic monitoring for nesting and roosting bald eagles and associated agency consultation are also defined in the BEMP.

3.0 PRESENCE OF BALD EAGLES IN THE VICINITY OF THE MFP

This section provides information on currently known bald eagle nests, winter roosts, and occurrences in the vicinity of the MFP based on the following sources:

- PCWA MFP Pre-Application Document (PAD) (PCWA 2007; SD H); and
- TERR 5 Bald Eagle Technical Study Report (TSR) – 2008 (TERR 5 – TSR) (PCWA 2010a; SD B).

Also provided is an overview of bald eagle reproductive chronology and associated sensitivity to human activities.

3.1 BALD EAGLE NESTS AND REPRODUCTIVE CHRONOLOGY

Based on the results of surveys conducted in 2007–2008 (TERR 5 – TSR [PCWA 2010a; SD B]), nesting bald eagles were identified only at Hell Hole Reservoir. One active bald eagle nest is located within ¼ mile of Hell Hole Reservoir near the confluence with the Rubicon River (BEMP Map 1). The general chronology for bald eagle reproductive activities, based on USFWS National Bald Eagle Management Guidelines (USFWS 2007), is as follows:

- Nest building (January–March);
- Egg laying and incubation (February–May);
- Hatching and rearing young (March–July); and
- Fledging young (June–August). At Hell Hole Reservoir, the juvenile bald eagle fledged between mid-June and late-July in 2008.

Bald eagle sensitivity to human activity varies depending on the eagles' reproductive activity. The sensitive period when eagles are most likely to respond negatively to human activity is during courtship and nest building. Eagles are also sensitive during egg laying/incubation, and the nestling period. Refer to BEMP Table 1 for a summary of bald eagle reproductive activities and associated sensitivity to human activities.

3.2 BALD EAGLE WINTER ROOSTS

Bald eagle winter roosts were identified only at Hell Hole Reservoir. Three winter roosts were located along the shoreline of Hell Hole Reservoir (BEMP Map 1).

3.3 BALD EAGLE OCCURRENCES

Bald eagles were observed in flight at Hell Hole Reservoir as well as at several locations along the Middle Fork American River and the Rubicon River (BEMP Map 1), including:

- Middle Fork American River downstream of Ralston Afterbay (peaking reach);
  - Upstream of Poverty Bar (RM 7.3),
  - Near New Orleans Gulch (RM 12.3), and
  - Near American Bar (RM 23.3).
- Rubicon River downstream of Hell Hole Reservoir (bypass reach);
  - Downstream of Ellicott Bridge (RM 20.4), and
  - Downstream of Hell Hole Dam (RM 26.2).

4.0 ROUTINE PROJECT MAINTENANCE ACTIVITIES AND PROJECT-RELATED RECREATION

The following provides a summary of routine Project maintenance activities and Project-related recreation for the MFP. Additional information is provided on routine maintenance activities and Project-related recreation at Hell Hole Reservoir, where the only bald eagle nests and winter roosts have been recorded in the vicinity of the MFP.

4.1 ROUTINE PROJECT MAINTENANCE

This section provides information on routine Project maintenance activities including vegetation and integrated pest management, transportation system management, and Project powerline maintenance. Emphasis is placed on maintenance activities conducted within ¼ mile of bald eagle nests and winter roosts in the vicinity of the MFP (i.e., adjacent to Hell Hole Reservoir). Additionally, because bald eagles select nesting and roosting sites based on the proximity to sufficient food sources (USFWS 2007), this section also provides information on routine Project maintenance activities adjacent to Hell Hole Reservoir including the facilities immediately downstream of Hell Hole Dam (e.g., Hell Hole Powerhouse).

4.1.1 Vegetation and Integrated Pest Management

PCWA conducts vegetation and integrated pest management activities to ensure the safe and effective operation of the MFP by reducing fire hazards, maintaining safe access to Project facilities and features, Project roads and trails, and Project recreation facilities and access roads; and protecting worker and public health and safety. Methods are selected on a site-specific basis considering: public health and safety, presence of special-status species, effectiveness, and economics. Refer to the

Vegetation and Integrated Pest Management Plan (VIPMP) (PCWA 2010b; SD A) for a detailed description of routine vegetation and pest management activities to be implemented over the term of the license.

A brief description of each of these activities is provided below.

Vegetation Management

- ***Vegetation trimming by hand*** includes trimming of grasses and forbs with a string trimmer and removal or trimming of shrubs and trees with a chain saw or other handheld saw.

- ***Vegetation trimming with equipment*** includes removal of vegetation on the shoulder of Project roads using mechanical equipment such as a flail-type mower.

- ***Herbicide use*** is the application of approved chemicals by one or more of the following applications: foliar, basal stem, cut-surface to control vegetation and noxious weeds. When appropriate, surfactants are mixed with herbicides to enhance the ability of an herbicide to penetrate into plant tissue and diminish vaporization and drift.

- ***Fungicide use*** is the application of Borax soap on tree stumps at Project recreation facilities to control fungi.

Pest Management

- ***Rodenticide use*** is the application of over-the-counter rodenticides (e.g., d-CON®) or other approved chemicals (e.g., metal phosphide fumigants) that are used in the interior of Project facilities or placed in rodent burrows or bait stations on Hell Hole and French Meadows Dam.

No vegetation or pest management activities are implemented within ¼ mile of the known bald eagle nest or winter roost. However, vegetation and pest management is conducted at Project facilities or Project recreation facilities adjacent to Hell Hole Reservoir. These activities are implemented in the spring or summer and include a combination of vegetation trimming by hand or with equipment and application of herbicides and fungicides. In the vicinity of Hell Hole, pest management is limited to the use of rodenticides to control rodent populations at Hell Hole Dam or within Project structures. BEMP Tables 2 and 3 provide a summary of vegetation and pest management activities conducted at Project facilities or Project recreation facilities near Hell Hole Reservoir.

4.1.2 Transportation System Management

PCWA conducts routine road maintenance activities, including road grading, surface maintenance (gravelling or paving), snow removal and/or road sanding, and maintenance of culverts, ditches, and water bars, on an as-needed basis. Other

maintenance activities that occur along Project roads and trails include vegetation management and the maintenance of signage and gates. Refer to the Transportation System Management Plan (TSMP) (PCWA 2010c; SD A) for a detailed description of routine road maintenance activities.

No transportation system management activities occur within ¼ mile of a currently existing bald eagle nest or winter roost. However, transportation system management activities are conducted at Project roads and Project recreation facilities adjacent to Hell Hole Reservoir (including immediately downstream of Hell Hole Dam). These activities are implemented in the spring, summer, or early fall and include a combination of road grading, surface maintenance (graveling or patching of existing road surfaces), and maintenance of associated features such as culverts, ditches, water bars, and gates. BEMP Tables 2 and 3 provide a summary of transportation system management activities conducted at Project facilities in the vicinity of Hell Hole Reservoir.

4.1.3 Project Powerline Maintenance

PCWA maintains Project powerlines on an as-needed basis. Routine powerline maintenance activities include replacement or retrofitting of poles, phase conductors, and associated equipment to ensure safe and efficient Project operations. In addition, vegetation management is implemented, 10 feet on either side of Project powerlines, to allow maintenance personnel to access the lines, to keep the lines free of encroaching vegetation, and to prevent fire.

No Project powerline maintenance activities occur within ¼ mile of a currently existing bald eagle nest or winter roost. However, maintenance is conducted at Project powerlines in the vicinity of Hell Hole Reservoir. BEMP Table 2 provides a summary of maintenance activities conducted at Project powerlines in the vicinity of Hell Hole Reservoir.

4.2 RECREATION FACILITY MAINTENANCE AND USE

The MFP includes a variety of developed Project recreation facilities, including seven campgrounds, three group campgrounds, three picnic areas, four boat ramps, and a vista. Most of the Project recreation facilities are concentrated around French Meadows Reservoir, and to a lesser extent Hell Hole Reservoir. Individual Project recreation facilities are also located near the South Fork Long Canyon Dam Diversion, Ralston Afterbay, and Oxbow Powerhouse. Additional information about the Project recreation facilities is available in SD A.

The Hell Hole area provides a variety of recreation opportunities including fishing, camping, reservoir boating, hiking, picnicking, and sight-seeing. These opportunities are supported by five developed Project recreation facilities, as follows: Big Meadows Campground, Hell Hole Campground, Upper Hell Hole campground, Hell Hole Vista, and Hell Hole Boat Ramp and associated parking areas. The locations of these recreation facilities are shown on Map 1. As indicated, Big Meadows Campground, Hell Hole Campground, and Hell Hole Vista are not located in the immediate vicinity of the

reservoir. Upper Hell Hole Campground is located at the upper end of the reservoir (south shore) and is accessible by boat or via the Upper Hell Hole Trail (14E02.3). The Hell Hole Boat Ramp provides the primary access to the reservoir.

In general, the Hell Hole Reservoir area is typically accessible from about May 1 to November 1. However, snow may limit access to the area until the end of May. Most recreation use occurs between Memorial Day and Labor Day, with the heaviest use occurring on weekends and holidays (REC 1 – Recreation Use and Facilities TSR [REC 1 – TSR] [PCWA 2010d; SD B]).

None of the Project recreation facilities in the vicinity of Hell Hole Reservoir is located within ¼ mile of a currently existing bald eagle nest or winter roost. The nearest facility is Upper Hell Hole Campground, which will be decommissioned (removed) due to low use levels and to protect nearby cultural and environmental resources. As outlined in PCWA's Recreation Plan (PCWA 2010e; SD A), decommissioning Upper Hell Hole Campground will involve removing 13 campsites, 4 pit toilets, and all associated site amenities (e.g., fire rings, stoves, and signage). Dispersed use may occur in this area after the facility is removed. Use of the Upper Hell Hole Trail (14E02.3), which continues along the shore of Hell Hole Reservoir from the campground and east to the vicinity of the bald eagle nest, may be reduced after decommissioning of the campground.

Routine maintenance activities will continue at the remaining Hell Hole area Project recreation facilities. Some of these activities occur annually and others occur on periodically on an as-needed basis. In general, routine annual maintenance includes activities such as site cleaning, basic repairs, garbage clean up, signing, painting, graffiti removal, and pathway maintenance. Periodic maintenance, also referred to as heavy maintenance, generally includes anything beyond normal, routine maintenance, and may include reconstruction, replacement and/or repair of facilities and infrastructure including: roads, water systems, sanitation systems, buildings, boat ramps, or other support facilities.

5.0 POTENTIAL EFFECTS ON BALD EAGLES

Potential effects of routine Project maintenance activities and recreation facility use on bald eagles were determined based on a review of relevant federal and state regulatory guidance (BEMP Table 4). In addition, the analysis considered the type and location of the Project activity in relation to the location of currently known bald eagle nest or winter roosts. Refer to BEMP Table 5 for a summary of potential Project effects and to BEMP Table 6 for an evaluation of Project powerlines in relation to raptor safety guidelines recommended by the Avian Power Line Interaction Committee (APLIC 2006). Potential Project-related effects listed in BEMP Table 5 form the basis for identifying and developing appropriate measures to avoid and protect bald eagles described in Section 6.0.

6.0 AVOIDANCE AND PROTECTION MEASURES

This section identifies measures to avoid and protect bald eagles during implementation of routine maintenance at Project facilities and Project recreation facilities throughout the term of the new Federal Energy Regulatory Commission (FERC or Commission) License. The following describes the approach used to develop the measures, followed by the specific measures.

6.1 APPROACH

Avoidance and protection measures were developed to address potential Project-related effects resulting from routine maintenance at Project facilities and Project recreation facilities. Refer to BEMP Table 5 for a list of potential effects and associated avoidance and protection measures. The approach for avoiding potential effects on bald eagles during implementation of routine maintenance activities was to develop measures that:

- Refine management activities (as described in the VIPMP [PCWA 2010b; SD A]);
- Establish bald eagle nest and winter roost monitoring surveys to identify newly occupied bald eagle territories or nesting activity for inclusion in the ongoing program to avoid adverse impacts and protect individuals and their supporting habitat during sensitive life stages (Section 7.0);
- Incorporate appropriate USFWS Bald Eagle Management Guidelines (USFWS 2007) and resource agency permitting requirements; and
- Establish an employee training program for awareness and sensitivity to bald eagle protection requirements.

6.2 SPECIFIC MEASURES

The following describes avoidance and protection measures to be implemented at Hell Hole Reservoir bald eagle habitat and, as necessary, at other occupied bald eagle habitat identified within the Project area during the term of the next license.

6.2.1 Vegetation and Integrated Pest Management

PCWA's VIPMP includes avoidance and protection measures related to vegetation and pest management that will be implemented to protect bald eagles over the license term. Specifically, this includes:

- Implementation of USDA-FS Water Quality Best Management Practices when applying pesticides (i.e., herbicides, fungicides, surfactants, and rodenticides).
- Establishment of protective buffers around streams and special aquatic features (including reservoirs) when applying pesticides.

Refer to the VIPMP (PCWA 2010b; SD A) for a complete list of avoidance and protection measures.

6.2.2 Project Powerline Maintenance

- **PPM 1.** Any powerline involved in the electrocution of a bald eagle or other protected raptor will be evaluated to determine the most feasible approach to eliminate the specified mortality risk site, through retrofitting the structure with raptor-safe equipment or replacing the structure with a raptor-safe pole configuration. The evaluation will be completed within 30 days of discovery of the raptor carcass. The evaluation will include review of the measures included in this Plan to verify adequate protection of raptors (including bald eagles). USDA-FS, CDFG, and USFWS will be notified in writing within 30 days of the mortality discovery and provided with the results of the evaluation and a schedule for completion of the proposed remedy at that location. The remedy will be implemented within three years of the mortality event. Recommended measures proposed in the evaluation and agreed upon by aforementioned agencies will be implemented by the Licensee.

- **PPM 2.** All powerline-related bald eagle mortalities will be reported to USFWS within five days of mortality discovery. Mortalities will also be reported, within 30 days, to the USFWS on-line "Bird Fatality/Injury Reporting Program."

- **PPM 3.** Raptor-safe powerline design configurations described in Suggested Practices for Avian Protection on Power Lines: *The State of the Art in 2006* (APLIC 2006) will be used for all new powerlines or when replacement of existing poles, phase conductors, and associated equipment is required. BEMP Table 6 provides a list of Project powerlines with one or more design elements that pose a risk for avian electrocution. PCWA will initiate replacement or retrofitting of these poles pursuant to APLIC within one year of license issuance. Pole replacement or retrofitting will continue to be implemented over a year period with completion of all poles, as specified in BEMP Table 6, within 15 years from license issuance.

- **PPM 4.** Within one year of license issuance, the Licensee will conduct an evaluation of newly installed Project power poles to determine their consistency with raptor-safe powerline design configurations described in suggested practices for Avian Protection on Power Lines (APLIC 2006). This includes an evaluation of the following:

    - Poles installed in 2006 on the Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline; and

    - Poles installed in 2008 on the French Meadows Powerhouse and Switchyard to Hell Hole – Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages, and Hell Hole Powerhouse Communication Line/Powerline.

Following completion of the evaluation a summary of the results will be provided to USFWS, USDA-FS, and CDFG.

If it is determined that the configurations of the newly installed powerlines are consistent with APLIC guidelines, then no further action would be required. If it is determined that the configurations are inconsistent with APLIC guidelines, the poles will be replaced or retrofitted, as specified in BEMP Table 6, within 15 years of license issuance.

6.2.3 Bald Eagle Nest Protection

- **NEST 1. Active Nests:** The Licensee will not remove active bald eagle nests (i.e., eggs, young, and/or incubating adults present) from power poles or cause disturbance within 500 feet of the nesting site without prior consultation with USFWS, USDA-FS, and CDFG. All necessary state/federal permits will be obtained by the Licensee prior to disturbance or proposed removal of an active bald eagle nest. However, if imminent danger to human life or property exists (e.g., risk of human electrocution, wildfire, or loss of generation facilities), nest material may be trimmed or other measures may be implemented to ensure safe Project operation. In this case, USFWS, USDA-FS, and CDFG will be notified, by telephone or in writing, within one week of any such emergency action.

- **NEST 2. Unoccupied Nests:** Unoccupied bald eagle nests will not be removed unless the presence of the nest creates a threat to human life or property. All necessary state/federal permits will be obtained by the Licensee prior to removal of an unoccupied bald eagle nest. However, if imminent danger to human life or property exists (e.g., risk of human electrocution, wildfire, or loss of generation facilities), nest material may be trimmed or other measures may be implemented to ensure safe Project operation. In this case, USFWS, USDA-FS, and CDFG will be notified, by telephone or in writing, within one week of any such action.

- **NEST 3.** The Licensee will obtain a permit from USFWS pursuant to the Bald and Golden Eagle Protection Act and shall consult with CDFG regarding any pending activity under the federal permit.

6.2.4 Employee Environmental Training

In addition to the measures listed above, the Licensee will develop and implement an Environmental Training Program (ETP) to educate PCWA personnel and contractors (as appropriate) about special-status biological resources, including bald eagles and noxious weeds in the vicinity of the MFP.

- **ETP 1.** The Licensee will develop an ETP that includes the following:

    - Photographs, habitat, and life history information for special-status plant and wildlife species, including bald eagles, that are known to occur or may potentially occur in the vicinity of the MFP;

- Measures to be implemented to protect special-status plant and animal species and their habitats during routine Project maintenance activities;
- Reporting procedures for discovery of raptor or other bird nests in the vicinity of the MFP; and
- Photographs and life history information for noxious weeds that are known to occur or may potentially occur in the MFP.

- **ETP 2.** The Licensee will conduct annual employee training to review information included in the ETP.

7.0 MONITORING, REPORTING, AND AGENCY CONSULTATION

This section describes monitoring, reporting, and agency consultation requirements.

7.1 MONITORING AND REPORTING REQUIREMENTS

Two types of surveys will be conducted to monitor the status of bald eagles at Project reservoirs and bypass reaches. Each of these is described below.

7.1.1 Bald Eagle Annual Active Nest Monitoring

The Licensee will coordinate with USFWS, USDA-FS, and CDFG to verify the status of active bald eagle nests located near Project reservoirs or river bypass and peaking reaches. If nests are not already scheduled to be surveyed in a particular year by an agency or recognized expert, then the Licensee will conduct the survey. Surveys will consist of three visits including:

- Early March – determine if the territory is occupied (record presence of adults, courtship behavior, and evidence of nest repair or construction);
- Late April or early May – determine if the breeding pair is still tending the nest (incubating eggs or tending to young nestlings); and
- Mid June to late July – determine number of fledglings present.

Following each annual survey by Licensee or other qualified expert, the Licensee will provide a summary of findings to USFWS, USDA-FS, and CDFG.

7.1.2 Bald Eagle Five-Year Nest and Winter Roost Surveys

The Licensee will conduct protocol-level bald eagle nesting and wintering surveys consistent with the methods described TERR 5 – TSR (PCWA 2010a; SD B). Surveys will be conducted every five years, with the first surveys beginning two years following license issuance. The survey area will include ½ mile around reservoirs and river bypass and peaking reaches listed below:

- French Meadows Reservoir;
- Hell Hole Reservoir;
- Middle Fork Interbay;
- Ralston Afterbay;
- Rubicon River from Hell Hole Reservoir to Middle Fork American River (MFAR) confluence;
- MFAR from French Meadows Reservoir to the confluence with North Fork American River (NFAR); and
- NFAR from the confluence MFAR to the Ordinary High Water Mark (OHWM) of Folsom Reservoir.

A report of the survey results will be submitted to USFWS, USDA-FS, and CDFG within 90 days of survey completion for review and comment. The report will include maps showing the location of any bald eagle nests or winter roosts observed. Following incorporation of resource agency comments, the report will be submitted to FERC for review. Bald eagle nest sites identified in the five-year monitoring efforts will be added to the list of annual active nest survey sites and will be protected by measures specified above and modified, as necessary, through consultation with agencies (Section 7.2).

7.1.3 Bald Eagle Mortality Monitoring and Reporting

Any Project-related bald eagle mortality will be reported to USFWS within five days of mortality discovery. In addition, all Project-related bald eagle mortalities will be reported to USFWS, USDA-FS, and CDFG in writing within 30 days of the mortality discovery or, as otherwise specified, in a permit from USFWS pursuant to the Bald and Golden Eagle Protection Act. Bald eagle mortalities will also be reported, within 30 days, using the USFWS on-line “Bird Fatality/Injury Reporting Program.” For bald eagle mortalities that occur on Project powerlines, an evaluation of the powerline will also be completed within 30 days of discovery (Section 6.2.2) and appropriate measures taken for pole replacement or retrofit in accordance with schedule for remedy developed under PPM1.

7.2 AGENCY CONSULTATION

The Licensee will consult annually with USFWS, USDA-FS, and CDFG on bald eagle and raptor issues, including the following:

- Annual nest monitoring and reporting (Section 7.1.1);
- Five-year nest and winter roost survey results (Section 7.1.2);
- Mortality monitoring and reporting (Section 7.1.3);

- Identification of any new nests at Project reservoirs and river bypass and peaking reaches; associated operation and maintenance activities within ¼ mile of the new nest; and the application of avoidance and protection measures included in this Plan; and

- Pole retrofit or replacement activity within the previous and upcoming year.

8.0 LITERATURE CITED

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

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____. 2010b. Vegetation and Integrated Pest Management Plan. Available in PCWA's Application for New License – Supporting Document A.

____. 2010c. Transportation System Management Plan. Available in PCWA's Application for New License – Supporting Document A.

____. 2010d. REC 1 – Recreation Use and Facilities Technical Study Report. Available in PCWA's Application for New License – Supporting Document B.

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United States Fish and Wildlife Service (USFWS). 2007. National Bald Eagle Management Guidelines. May 2007.

TABLES

BEMP Table 1. Timing of Bald Eagle Reproductive Activities and Associated Sensitivity Levels.

Activity	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Timing of Bald Eagle Reproductive Activities and Sensitivity to Human Activities (Pacific Region)[1]												
Nest Building												
Egg Laying/ Incubation												
Hatching/ Rearing Young												
Fledging Young												

[1]National Bald Eagle Management Guidelines, USFWS 2007

Sensitivity to Human Activity

= Most sensitive period: likely to respond negatively

= Very sensitive

= Moderately sensitive

BEMP Table 2. Project Facilities Located Adjacent to Hell Hole Reservoir or Immediately Downstream of Hell Hole Dam and Associated Routine Maintenance Activities.

Project Facility or Features	Inspection & Maintenance		Vegetation Management			Pest Management				Sediment Management						Transportation System Management	
										Small Diversion			Medium Reservoirs				
	Tunnel and Powerhouse Inspection, Testing, and Maintenance	Spillway & Tainter Gate Testing	Trimming by Hand	Trimming with Equipment	Herbicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants	Physical Removal w/Equipment	Interim Sediment Mgmt.	Contingency Sediment Mgmt.	Physical Removal w/Equipment	Sediment Augmentation	Sediment Disposal	Annual Road and Trail Maintenance	Periodic Road and Trail Maintenance
Dams Reservoirs, and Diversion Pools																	
Large Dams																	
Hell Hole Dam and Outlet Works	A	A	A		A	X			X								
Large Reservoirs																	
Hell Hole Reservoir																	
Water Conveyance Systems																	
Intakes and Gatehouses																	
Hell Hole - Middle Fork Tunnel Gatehouse			A														
Hell Hole - Middle Fork Tunnel Intake			A														
Powerhouses, Switchyards, and Substations																	
French Meadows Powerhouse and Switchyard	A		A		A	X	X	X									
Hell Hole Powerhouse	A		A			X	X	X									
Hell Hole Substation			A			X	X	X									
Gaging Stations and Weirs																	
Stream Gages and Weirs																	
Rubicon River Gage and Weir at Hell Hole Dam Spillway																	
Rubicon River Gages at Hell Hole Dam Outlet Works																	

BEMP Table 2. Project Facilities Located Adjacent to Hell Hole Reservoir or Immediately Downstream of Hell Hole Dam and Associated Routine Maintenance Activities (continued).

Project Facility or Features	Inspection & Maintenance		Vegetation Management			Pest Management				Sediment Management						Transportation System Management	
										Small Diversion			Medium Reservoirs				
	Tunnel and Powerhouse Inspection, Testing, and Maintenance	Spillway & Tainter Gate Testing	Trimming by Hand	Trimming with Equipment	Herbicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants	Physical Removal w/Equipment	Interim Sediment Mgmt.	Contingency Sediment Mgmt.	Physical Removal w/Equipment	Sediment Augmentation	Sediment Disposal	Annual Road and Trail Maintenance	Periodic Road and Trail Maintenance
Reservoir Gages																	
Hell Hole Reservoir Gage (USGS Gage No. 11428700)																	
Hell Hole Reservoir Staff Gage																	
Powerhouse Gages																	
French Meadows Powerhouse Gage (USGS Gage No. 11427200)																	
Project Communication Lines and																	
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline			A		A												
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator's Cottages, and Hell Hole Powerhouse Communication Line/Powerline			A														
Hell Hole Dam Spillway Crest Gates Control Building Communication Line/Powerline																	

BEMP Table 2. Project Facilities Located Adjacent to Hell Hole Reservoir or Immediately Downstream of Hell Hole Dam and Associated Routine Maintenance Activities (continued).

Project Facility or Features	Inspection & Maintenance		Vegetation Management			Pest Management				Sediment Management						Transportation System Management	
										Small Diversion			Medium Reservoirs				
	Tunnel and Powerhouse Inspection, Testing, and Maintenance	Spillway & Tainter Gate Testing	Trimming by Hand	Trimming with Equipment	Herbicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants	Physical Removal w/Equipment	Interim Sediment Mgmt.	Contingency Sediment Mgmt.	Physical Removal w/Equipment	Sediment Augmentation	Sediment Disposal	Annual Road and Trail Maintenance	Periodic Road and Trail Maintenance
Ancillary Facilities																	
Hell Hole Dam Spillway Crest Gates Control Building			A				X	X									
Project Fences																	
Slope Fences																	
French Meadows Powerhouse Penstock Rock Fence																	
French Meadows Powerhouse Slope Fence			I			X											
Project Roads																	
Hell Hole Dam and Powerhouse Road			A		A	X										X	X
Rubicon River Gage and Weir below Hell Hole Dam Road			A	A		X										X	X
Hell Hole Dam Leakage Weir Road			A	A		X										X	X
Hell Hole Dam Spillway Northern Access Point Road			A	A		X										X	X
French Meadows Powerhouse Road			A	A		X										X	X
Hell Hole - Middle Fork Tunnel Gatehouse Road			A	A												X	X

A = Activity occurs on an annual basis.
I = Activity occurs on an infrequent basis.
X = Activity occurs or ancillary facility is present.

[1]Indicates areas where manual and chemical treatment of target noxious weeds populations will be implemented. Manual and chemical treatments may be completed at other locations during the term of the license if new target noxious weeds populations are identified during inventory surveys.

BEMP Table 3. Project Recreation Facilities Located Adjacent to Hell Hole Reservoir or Immediately Downstream of Hell Hole Dam and Associated Maintenance Activities.

Recreation Facility or Feature	Recreation Facility Annual Mantenance[1]	Vegetation Management		Pest Mgmt	Recreation Facility Heavy Maintenance[3]
		Trimming by Hand	Fungicide Use	Noxious Weed Management[2]	
Hell Hole Area					
Hell Hole Boat Ramp	X	A		X	X
Hell Hole General Parking Area and Hell Hole Boat Ramp Parking Area	X	A		X	X

A = Activity implemented annually throughout the year

X = Activity is implemented.

[1]Annual maintenance includes: site cleaning; basic repairs and maintenance of facility features; garbage clean-up; signing; toilet cleaning and restocking; toilet pumping; graffiti removal; removal of debris from boat ramps; basic maintenance of pathways; routine testing of water supplies; annual winterizing and opening activities; and hazard tree removal.

[2]Indicates areas where manual and chemical treatment of target noxious weeds populations will be implemented. Manual and chemical treatments may be completed at other locations during the term of the license in new target noxious weeds populations are identified during inventory surveys.

[3]Heavy maintenance includes: repair and resurfacing of parking areas and spurs; repair or replacement of barrier structures and devices; repair and/or replacement of site/facility amenities; repair and replacement of signage, information boards, and fee tubes; repair, maintenance, and painting of bathroom structures; repair and maintenance of potable water supplies and distribution lines; repair and maintenance of septic systems; repair and sealing of boat ramps; repair or installation of retaining walls; site leveling and removal of obstacles; fuels reduction; and maintenance of pathways.

BEMP Table 4. Regulatory Guidance Considered in Development of Avoidance and Protection Measures for Bald Eagles.

Regulatory Guidance	Source (Agency)
• The Bald and Golden Eagle Protection Act (The Eagle Act), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. • The Eagle Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." • The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb'' means to "agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." (USFWS 2007)	Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668c)
• USFWS developed the National Bald Eagle Management Guidelines (Guidelines) to publicize the provisions of the Eagle Act that continue to protect bald eagles after the removal of the bald eagle from protection under the Endangered Species Act; and to advise landowners, land managers and the general public of the potential for various human activities to disturb bald eagles. The Guidelines include recommendations for avoiding disturbance at nesting and roosting sites. • To avoid disturbing nesting bald eagles, USFWS recommends (1) keeping a distance between the activity and the nest (distance buffers), (2) maintaining preferably forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding certain activities during the breeding season.[1] Activities are separated into 8 categories (A–H) based on the nature and magnitude of impacts to bald eagles that usually result from the type of activity. Applicable activities are listed below: o **Category A and B** (Construction activities of various kinds including buildings, roads, and powerlines): Avoid activity within 660 feet of bald eagle nest during the breeding period. o **Category D** (Off-road vehicle use): During the breeding season, do not operate off-road vehicles within 330 feet of the nest. o **Category E** (Motorized watercraft use): During the breeding season, within 330 feet of the nest, (1) do not operate jet skis (personal watercraft), and (2) avoid concentrations of noisy vessels (e.g., commercial fishing boats and tour boats), except where eagles have demonstrated tolerance for such activity. o **Category F** (Non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting, birdwatching, kayaking, canoeing)):If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity.	USFWS National Bald Eagle Management Guidelines (2007)

[1]The bald eagle breeding season in the Pacific Region is January-August and includes the following reproductive activities: nest building, egg laying and incubation, hatching and rearing, and fledging (National Bald Eagle Management Guidelines, USFWS 2007).

BEMP Table 5. Potential Project Effects and Associated Avoidance and Protection Measures.

Activity	Potential Effects	Avoidance/Protection Measures
Routine Project Maintenance		
Vegetation and Pest Management		
Trimming by hand or with equipment	• Potential disturbance of nesting birds • Potential loss of an active bald eagle nest	• **Vegetation and Integrated Pest Management Plan** • **ETP 1–2**
Herbicide and Fungicide use	• Potential degradation of water quality and aquatic habitat • Potential loss of aquatic species • Potential disturbance of nesting birds • Potential loss of an active bald eagle nest	• **Vegetation and Integrated Pest Management Plan** • **ETP 1–2**
Rodenticide Use	• Potential degradation of water quality and aquatic habitats • Potential loss of bald eagle from direct ingestion of rodenticide or ingestion of poisoned rodents	• **Vegetation and Integrated Pest Management Plan** • **ETP 1–2**
Transportation System Management		
Road Grading Surface Maintenance (graveling or patching of existing road surfaces) Maintenance of Culverts, Ditches, Water Bars and Gates	• Potential degradation of water quality and aquatic habitats • Potential disturbance of nesting bald eagles	**No Measures Currently Proposed.** • Transportation System Management is not implemented within 1/4 mile of the currently known bald eagle nest or with 1/8 mile of winter roosts. • Annual consultation with USFS, USFWS, and CDFG will provide updated measures to be implemented as necessary for protection of newly identified raptor nesting sites.
Project Powerline Maintenance		
Replacement of Poles, Phased Conductors, and Associated Equipment Vegetation Management	• Potential disturbance of nesting birds • Potential loss of an active or unoccupied bald eagle nest	• **Vegetation and Integrated Pest Management Plan** • **Nest 1–3** • **PPM 1** • **ETP 1–2**

BEMP Table 5. Potential Project Effects and Associated Avoidance and Protection Measures (continued).

Activity	Potential Effects	Avoidance/Protection Measures
Project Facility		
Project Powerline Structure and Design	• Potential avian electrocution	• **PPM 1–4** • **ETP 1**
Project-Related Recreation		
Developed and Dispersed Camping, Boating, Fishing and Hiking	• Potential disturbance of nesting birds	**No Measures Currently Proposed, because:** • No Project recreation facilities are located within 1/4 mile of the currently known nest. • Bald eagles selected the nest site and successfully fledged young while Project-related recreation activities occurred in the vicinity of Hell Hole Reservoir. • Project-related recreation activities have been on-going since 1967. • Recreation activities are limited near the bald eagle nest and typically occur during the late evening and fledgling period. • Annual consultation with USFS, USFWS, and CDFG will provide updated measures to be implemented as necessary for protection of newly identified raptor nesting sites.

BEMP Table 6. Project Powerlines with Design Elements that Pose a Risk for Avian Electrocution and Anticipated Timing for Power Pole Replacement or Retrofit.

Name	Start	End	Length (Approx)	Voltage	Configuration Notes	Potential Risk for Avian Electrocution		Anticipated Timing for Power Pole Replacement or Retrofit
						Distance Between Conductors is Less than 60”	Distance Between Energized and Grounded Equipment on Equipment Poles is Less than 60”	
Ralston Area								
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline	Ralston Powerhouse	Ralston Powerhouse Butterfly Valve House	0.22 mi.	4.16 kV	• Three-phase distribution lines on wooden poles, with crossarms. • Communication line (insulated) • Equipment pole with three transformers	X	X	▪ Within 15 years of license issuance. ▪ Poles replaced in 2006 following the Ralston Ridge Fire will be evaluated within 1 year of license issuance to determine consistency with APLIC guidelines: o If not APLIC consistent, poles will be replaced or retrofitted within 15 years of license issuance o If APLIC consistent, no further action would be required
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline	Ralston Afterbay Dam Generator Building	Ralston-Oxbow Tunnel Intake Gatehouse	0.15 mi.	2.16 kV	• Three phase distribution lines on wooden poles, with crossarms. • Neutral (ground) wire strung alongside phase wires • Communication line (insulated) • Equipment pole with three transformers	X	X	Within 15 years of license issuance
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline	Oxbow Powerhouse	Ralston Afterbay Dam Generator Building	0.17 mi.	2.4 kV	• Three-phase distribution lines on wooden poles and one steel pole. The three phases are insulated and bound together. • Equipment pole with three transformers • Communication line (insulated)		X	Within 15 years of license issuance
Middle Fork Interbay Area								
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline	Middle Fork Powerhouse	Middle Fork Powerhouse Butterfly Valve House	0.62 mi.	2.4 kV	• Three-phase distribution lines on wooden poles, with crossarms. • Equipment pole with three transformers • Communication line (insulated)	X	X	Within 15 years of license issuance
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline	Middle Fork Powerhouse	Middle Fork-Ralston Tunnel Intake and Gatehouse	0.36 mi.	2.4 kV	• Three-phase distribution lines on wooden poles. The three phases are insulated and bound together. • Equipment pole with three transformers • Communication line (insulated)		X	Within 15 years of license issuance

BEMP Table 6. Project Powerlines with Design Elements that Pose a Risk for Avian Electrocution and Anticipated Timing for Power Pole Replacement or Retrofit (continued).

Name	Start	End	Length (Approx)	Voltage	Configuration Notes	Potential Risk for Avian Electrocution		Anticipated Timing for Power Pole Replacement or Retrofit
						Distance Between Conductors is Less than 60”	Distance Between Energized and Grounded Equipment on Equipment Poles is Less than 60”	
French Meadows Area								
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline	French Meadows Dam Generator Building	French Meadows Dam Outlet Work	0.23 mi.	208 V	• Three-phase distribution lines. At least one wire is insulated and phases are bound together.		X	Within 15 years of license issuance
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline	French Meadows Dam Generator Building	French Meadows Dam Spillway Gates	69 ft.	208 V	• Three-phase distribution lines on wooden poles and one steel pole. The three phases are insulated and bound together.		X	Within 15 years of license issuance
Hell Hole Area								
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline	French Meadows Powerhouse and switchyard	Butterfly valve house at the top of French Meadows Powerhouse Penstock	0.1 mi	2.4 kV	• Three-phase distribution lines. At least one wire is insulated and phases are bound together. • Communication line (insulated)	X	X	Within 15 years of license issuance
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator’s Cottages, and Hell Hole Powerhouse Communication Line/Powerline	French Meadows Powerhouse and Switchyard	Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse	2.29 mi.	12 kV	• Most of the extent consists of three-phase distribution lines on wooden poles with crossarms. • A portion of the powerline leading to the Hell Hole Powerhouse has three-phase distribution lines with conductors mounted vertically on the poles (no crossarms). • There are several equipment poles and structures throughout the extent of this line, especially large structures at the Hell Hole Substation and the Hell Hole Powerhouse. • Communication line (insulated)	X	X	• Approximately 90% of the poles will be replaced or retrofitted within 15 years of license issuance. • Poles replaced in 2008 (10%) will be evaluated within 1 year of license issuance to determine consistency with APLIC guidelines: o If not APLIC consistent, poles will be replaced or retrofitted within 15 years of license issuance o If APLIC consistent, no further action would be required

MAP

CONFIDENTIAL

MAP

"BEMP Map 1: Bald Eagle Nests and Winter Roosts in the Hell Hole Area"

(from Bald Eagle Management Plan)

Map 1 has been removed from this document because it contains the location(s) of special-status biological resources and is considered "confidential" information. Confidential special-status biological resources information is located in Volume 4 which may not be made available to the public pursuant to the Federal Energy Regulatory Commission's (FERC's) regulated contained in 36 CFR 385.1112. This information is not maintained in FERC's Public Reference Room or on the Commission's electronic library except as an indexed item.