Bald Eagle Monitoring Plan

Sacramento Municipal Utility District

Hydro License Implementation • May 2015 Upper American River Project FERC Project No. 2101





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1.0 Background and Introduction

This bald eagle (*Haliaeetus leucocephalus*) monitoring plan was prepared according to the terms and conditions found in the Order Issuing New License for SMUD's Upper American River Project (UARP) issued by the Federal Energy Regulatory Commission (FERC) (FERC 2014). The FERC License-related conditions that are applicable to this monitoring plan are included as Attachments 1 and 2 at the end of this document.

1.1 Project Area

The UARP lies within El Dorado and Sacramento counties, primarily within lands of the Eldorado National Forest (ENF). The UARP consists of three major storage reservoirs— Loon Lake, Union Valley and Ice House (with a combined capacity of 379,622 acre-feet), eight smaller regulating or diversion reservoirs, and eight powerhouses. The UARP began operations in 1961 and has a generating capacity of approximately 688 megawatts (MW). The UARP also includes recreation facilities containing over 700 campsites, five boat ramps, and hiking and bicycling trails at the reservoirs. Construction of the reservoirs has created nesting and foraging habitat for bald eagles, which have been consistently using Union Valley Reservoir since regular surveys for eagles began.

1.2 Status of the Species

The bald eagle was listed by the USFWS as a federal endangered species in 1978, primarily due to population declines related to habitat loss, combined with contamination of prey species by past use of organochlorine pesticides, such as DDT and dieldrin (FS 2004). On August 11, 1995, the federal listing for bald eagle was downgraded to threatened status in all lower 48 states. Since then, all of the recovery goals set forth in the Recovery Plan for the Bald Eagle Pacific Region have been met and the USFWS formally delisted the species in 2007 and removed protections afforded by the ESA (USFWS 2007a). Bald eagle status continues to be monitored throughout the 48 contiguous states under a 20-year post delisting monitoring plan adopted in 2009 (USFWS 2009). The bald eagle is also federally protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The bald eagle was added to the California list of endangered species in 1971. The bald eagle is afforded additional state protection as a fully protected bird species (Fish and G. Code § 3511) and through



other laws that prohibit the take of nesting birds, their nests, and eggs, and migratory birds (Fish and G. Code §§ 3503, 3503.5, and 3513).

The ENF has maintained a Bald Eagle Management Plan since 1999 to protect wintering and nesting eagles at Union Valley Reservoir and has established Limited Operating Periods (LOPs) around nests (ENF 1999). SMUD is required under the above laws and regulations to observe LOPs and ensure that project-related activities do not result in any form of "take" of the species. The federal Bald and Golden Eagle Protection Act defines "take" as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb. Pursuant to Fish and Game Code Section 86, the State of California defines "take" as: hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

1.3 National and Regional Occurrence

Bald eagles are a North American species that historically occurred throughout the contiguous United States and Alaska. After severely declining in the lower 48 States between the 1870s and the 1970s, bald eagles have rebounded and re-established breeding territories in each of the lower 48 states. The largest North American breeding populations are in Alaska and Canada, but there are also significant bald eagle populations in Florida, the Pacific Northwest, the Greater Yellowstone area, the Great Lakes states, and the Chesapeake Bay region (USFWS 2007b).

The bald eagle breeds and winters throughout California, except for the desert areas. Most breeding in the state occurs in northern California, but eagles also nest in scattered locations in the central and southern Sierra Nevada Mountains and foothills in several locations from the central coast range to inland southern California, and on Santa Catalina Island (CDFW 2015). California's breeding population is resident yearround in most areas where the climate is relatively mild (Jurek 1988). Bald eagles in winter may be found throughout most of California at lakes, reservoirs, rivers, and some rangelands and coastal wetlands (CDFW 2015). Between mid-October and December, migratory birds from areas north and northeast of California arrive in the state. Wintering populations remain through March or early April. Based on annual wintering and breeding bird surveys, it is estimated that between 100 and 300 eagles winter on Sierra Nevada National Forests, and at least 151 to 180 pairs remain year-round to breed (SMUD 2001).

Bald eagles commonly use reservoirs throughout California and the rest of the United States for nesting and foraging (SMUD 2004). CDFG data from 1997 indicated that of the known 171 nesting bald eagles in California at that time, 63 percent were located on reservoirs, 18 percent on natural lakes, 16 percent along rivers and streams, and 4 percent on the ocean (SMUD 2004). Reservoir operations associated with hydroelectric



projects are generally compatible with eagle-nesting activity, provided extreme drawdowns do not occur (SMUD 2004).

1.4 Occurrence in Project Vicinity

The initial literature and resource database reviews and resource agency personnel consultations conducted at the outset of the UARP revealed that one pair of bald eagles had been known to nest at Union Valley Reservoir every year since 1986 (SMUD 2001 citing Yasuda, ENF biologist, pers. comm.). The first known nest site at the Reservoir was located in the Wench Creek Campground (T. 12N, R. 14E. Section 14 in 1988). The Wench Creek nest fledged young successfully in 1986 and 1987, and the nest was used but unsuccessful in 1988, 1990, and 1991. The Wench Creek nest tree was removed for safety concerns in 1995 after it had been struck by lightning. A second nest site, named the West Point nest, was discovered near Union Valley Dam (T. 12N. R. 14E, Section 29) in 1989. ENF biologists believe that the eagles began constructing the West Point nest in 1988, and the pair appeared to be feeding young in 1989, but the nest failed that year following a late-spring snowstorm. The Cleveland Fire destroyed the West Point nest in 1992. A third nest was discovered in 1992 on Granlees Point (T. 12N, R. 14E, Section 23), and this site fledged young successfully in 1992, 1993, 1994, 1997 and 2000. The Granlees Point nest was unsuccessful in 1995, 1996, 1998, 1999 and 2001 (SMUD 2001). The Granlees Point nest site is near the existing bike trail at Union Valley Reservoir and located across the Reservoir within 1 mile south of the western terminus of the proposed bike trail extension.

1.5 2002- 2004 Bald Eagle Study and Observations

In response to bald eagle protections and management directives, the UARP Terrestrial Resources TWG developed the Bald Eagle and Osprey Study Plan to better understand the effects of the UARP on the bald eagle and its habitat. The study was approved by the TWG on December 21, 2002, and by the UARP Relicensing Plenary Group on February 6, 2003 (SMUD 2004).

Union Valley Reservoir

During 2003 and 2004, researchers recorded detailed observations on nest and foraging behavior of the year-round resident pair at Union Valley Reservoir, including numbers and seasonality of non-resident birds, age structure of the bald eagle population, and general habitat utilization (Figure 1). During this time period, researchers frequently observed eagles using an incense cedar snag near the Robb's powerhouse as a foraging perch (Data Point 6, Figure 1) (SMUD 2004).

In 2003, the pair nested in a sub-dominant ponderosa pine (UTM 107271146E, 4306022N) near the eastern edge of the Granlees Point nest stand. The nest tree was



approximately 50 meters in height, with a dbh of about 124 centimeters. Several dominant sugar pines west of the nest tree served as sentinel (pilot) perches that afforded the birds an unobstructed view of the nest. The nest tree was located approximately 15 meters east of the paved bike path that runs through the stand. Monitors determined that the territorial pair laid eggs between March 30 and April 2, 2003, and were incubating by April 2, 2003. A late season storm during the first week in May brought several inches of precipitation as both rain and snow, with freezing night and early morning temperatures. Observations of nesting behavior suggested that the eggs were likely not viable and on May 15, 2003, the pair abandoned the nest. In early March 2004, the territorial pair was again nesting on Granlees Point but at a different nest than the one used in 2003. Behavior of the adults indicated that they had begun incubating nearly one month earlier than in 2003. One egg was estimated to have hatched between April 13 and April 22, 2004. The nestling was first observed branching out from the nest on June 24, 2004, and had fledged the nest by July 17, 2004 (SMUD 2004).

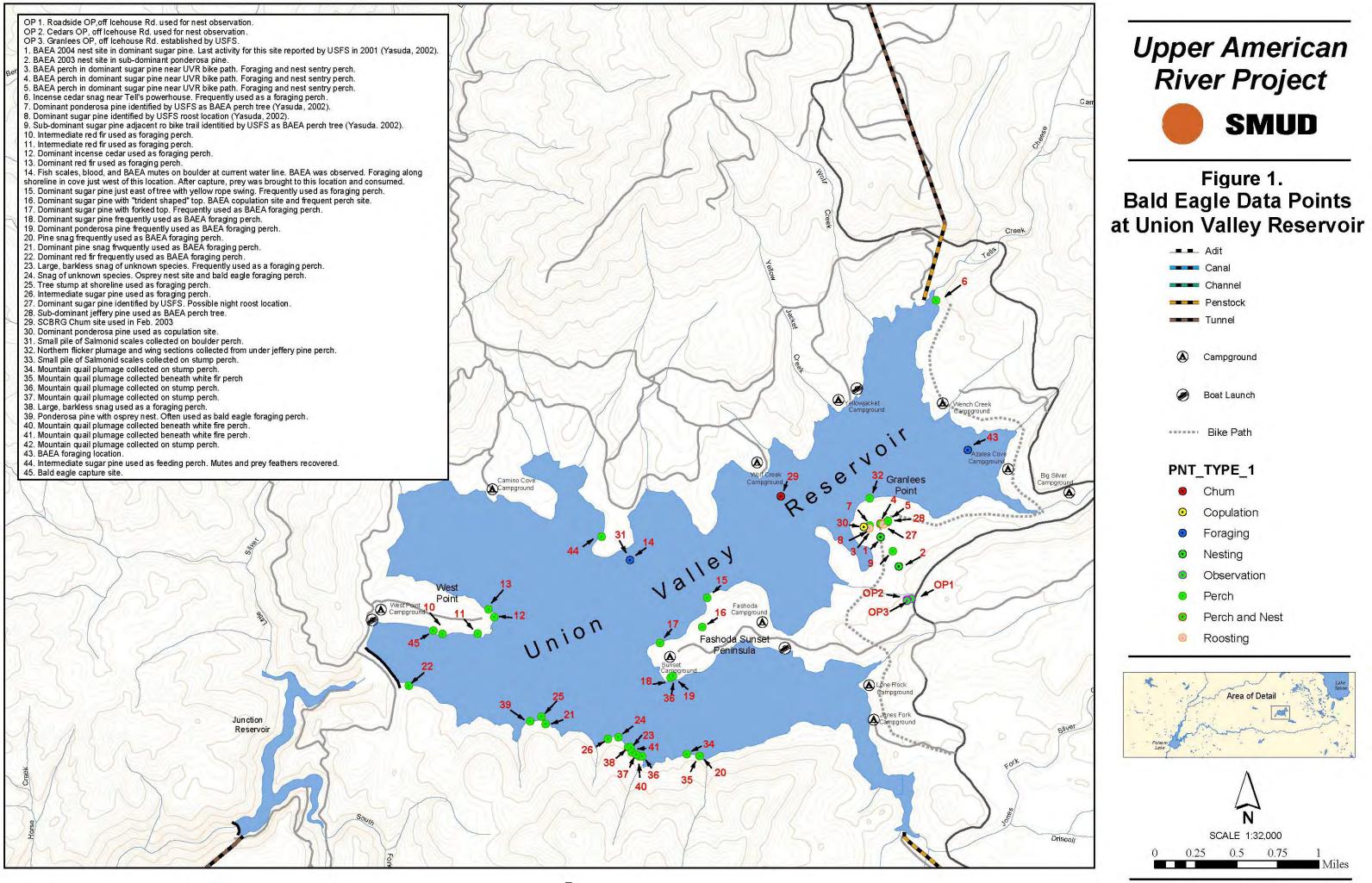
Loon Lake

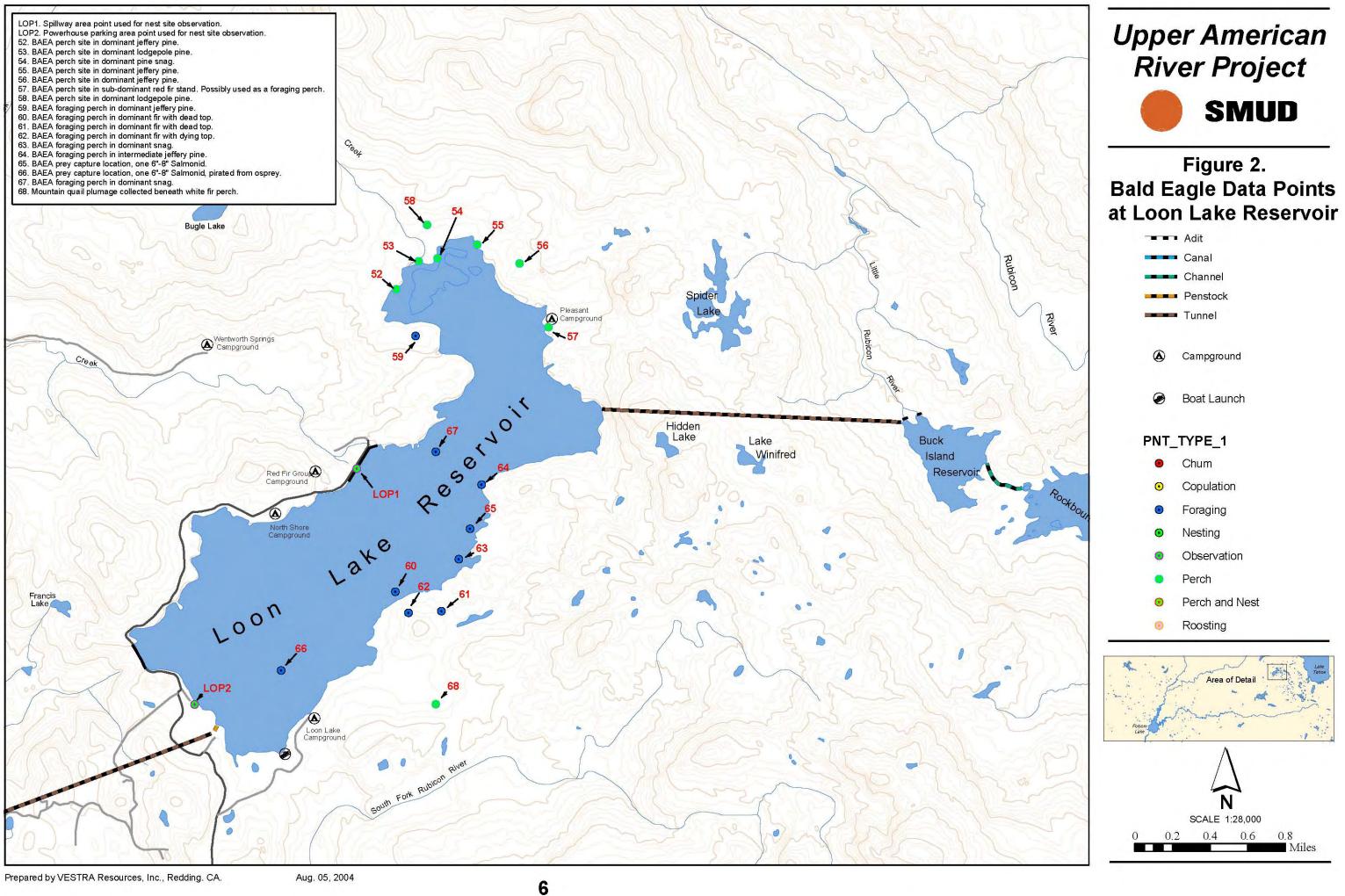
During the 2002-2004 study, another breeding pair was discovered nesting at Loon Lake Reservoir. In 2003 a pair of eagles was observed over a period of time in the spring, attempting to nest. A nest was constructed but no incubation or brooding was observed. The pair at Loon Lake hatched two young in 2004 but both eaglets died before fledging. Details of the locations are shown in Figure 2 below. It is possible, based on the elevation and freezing of Loon Lake Reservoir, that the nesting pair are not year-round residents of the Crystal Basin, unlike the resident eagles at Union Valley Reservoir.

Ice House Reservoir

No nesting bald eagles have been documented at Ice House Reservoir, but suitable nesting habitat is present.

Additional details from the 2002-2004 relicensing study can be found in the full 2004 report (SMUD 2004).





Prepared by VESTRA Resources, Inc., Redding. CA.



1.6 Species Distribution in the ENF

In 2001, at the outset of the UARP relicensing process, the Union Valley breeding pair was the only nest location in the ENF; since that time successful nesting has been confirmed at Jenkinson, Hell Hole and Stumpy Meadows Reservoirs, which are within the ENF, but outside the UARP project area.



The ENF has mapped suitable nesting, summer, and winter bald eagle habitat at various sites in the ENF (Figure 3), including around UARP features (Table 1).

Location	Bald Eagle Habitat
Loon Lake Reservoir	Summer habitat along southeast shore
Gerle Creek Reservoir	Summer habitat around entire shoreline
Ice House Reservoir	Summer/winter habitat along northwest shore and southeast shore
SFAR	Winter habitat from about Kyburz to west boundary of ENF
Union Valley Reservoir	Nesting/wintering habitat at northeast and southeast shores; Summer/winter habitat around entire reservoir

Table 1. Suitable Bald Eagle Habitat in the Eldorado National Forest

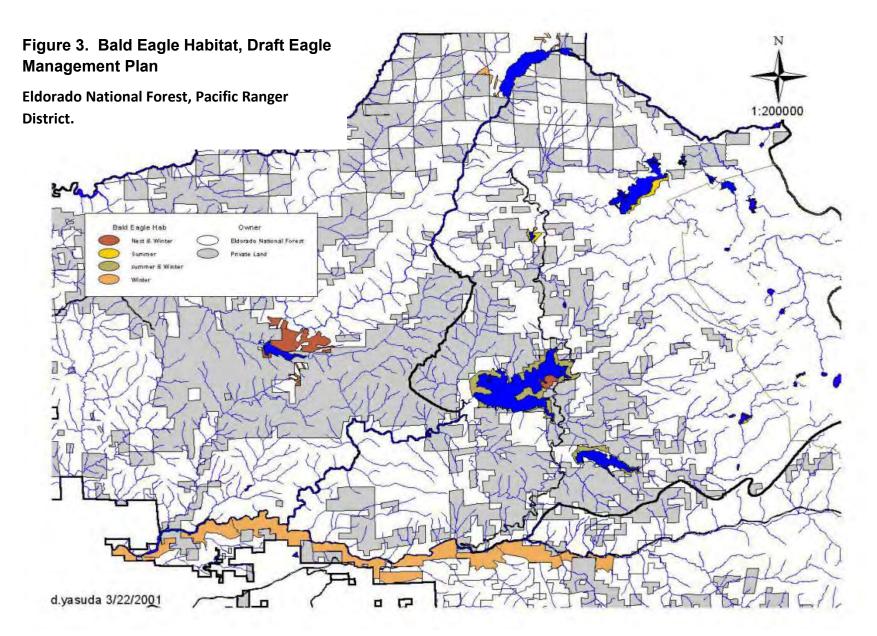
Source: SMUD 2001

The two bald eagle winter/ nesting areas mapped around Stumpy Meadow Lake and Hell Hole Reservoir (Figure 3) are located in the burn area of the 2014 King Fire to unknown effect. The ENF has delineated additional summer habitat at Wrights Lake just east of the UARP and the CNDDB (2014) reports that eagles have wintered at Bass Lake in western El Dorado County (T. 10 N., R. 9 E., S. 31, NE ¼; elevation 1,250 feet) for over 40 years. The Bass Lake location is about 40 miles southwest of Union Valley.

1.8 Bald Eagle Habitat Utilization at Union Valley Reservoir

Perch locations used most commonly by the territorial bald eagle pair at Union Valley Reservoir during the 2002-2004 study are shown in Figure 1. Perches serve a number of purposes as components of bald eagle habitat, including foraging and hunting, feeding, night roosting, territorial defense, and copulation. Perch structures ranged from dominant trees and snags to saplings and shoreline boulders. Bald eagles were commonly seen perched on the dominant and sub-dominant sugar pines, lodgepole pines, incense cedars, white firs, Jeffrey pines, ponderosa pines, and various snags that border the Reservoir. Most observations of perched birds were from the south and east perimeter of the Reservoir with only two observations made of perched birds on the north side of the Reservoir between Yellowjacket and Wolf Creek Campgrounds (SMUD 2004).





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Most foraging perch locations were less than 20 meters from the shoreline. Tree perch height varied from 2 to 70 meters. The many boulders and stumps near the waterline were also commonly used, though their availability was subject to changes in reservoir levels. Most habitually used foraging perches were located along the west and south shores of the Reservoir, in the forest stands adjacent to Union Valley Dam, and in the stands on the Sunset/Fashoda Peninsula and Granlees Point.

Night roosts of the territorial pair were generally located on or near Granlees Point (SMUD 2004). While the territorial adults were confined to night roost in the forest stands on the Sunset/Fashoda Peninsula and Granlees Point, other night roost locations can also exist. Any number of trees in the forest surrounding Union Valley Reservoir can provide adequate night roosts, and the birds' choice of night roost locations may be determined by such factors as: season, weather, prey availability, human activities, breeding behavior, territorial defense, and disturbance.

1.9 Home Range at Union Valley Reservoir

While researchers have identified some of the key bald eagle use areas at Union Valley Reservoir, an accurate assessment of the resident bald eagles' home range is not possible with available data and in the absence of radio-telemetry (SMUD 2004). At this time, it is not clear exactly how much of the ENF is included in the Union Valley Reservoir eagles' home range. However, consistent observations of the resident birds habitual foraging, perching, and roosting at Union Valley Reservoir indicates that the Reservoir and surrounding groves provide most of the habitat requirements to support the breeding pair. These regular observations suggest that the Union Valley Reservoir eagles have become somewhat habituated to human activities on and around the lake.

1.10 Reproductive Success at Union Valley Reservoir

Between 1986 and 2004, the breeding pair successfully fledged 11 young among the three nest sites on the Reservoir (SMUD 2004). Table 2 presents the known reproductive history for the Union Valley Reservoir bald eagle nesting territory.

The Wench Creek nest was used between 1986 and 1991, and successfully fledged one eaglet in 1986 and one in 1987. Reproductive status of the Wench Creek site for 1988 is unknown. In 1989, the pair was seen on a nest at West Point possibly feeding young but the nest failed in late April following a late spring snowstorm. The eagles returned to the Wench Creek site in 1990 and 1991, failing to reproduce both years. No subsequent nesting attempts occurred at the Wench Creek site and the historic nest tree was removed by the ENF in 1995 after lightning strikes made it unsafe for humans and uninhabitable for bald eagles (SMUD 2004).

Between 1995 and 2002, the resident pair focused their breeding activities in a dominant sugar pine (UTM 10726965E, 4306309N) on Granlees Point, and no other nest sites were documented at Union Valley Reservoir during this time. Clutches were successfully hatched in 1992, 1993, 1994, and 1997, and each produced two eaglets (SMUD 2004). This nest site is reported to have failed in 1998, 1999, and 2001, with late season snowstorms a likely contributing factor in the failure (SMUD 2004). ENF



biologists reported that the Granlees Point nest fledged an unknown number of eaglets in 2000 but nesting was not confirmed at this location in 2002 (SMUD 2004).

Table 2. Productivity summary for bald eagles nesting at Union Valley Reservoir, 1986-2004

Year	Status	Young fledged	Location
1986	Successful	1	Wench Creek
1987	Successful	1	Wench Creek
1988	Occupied/Success	Unknown/Unknown	Wench Creek
1989	Occupied/Unsuccessful	0	West Point
1990	Occupied/Unsuccessful	0	Wench Creek
1991	Occupied/Unsuccessful	0	Wench Creek
1992	Successful	2	Granlees Point nest #1
1993	Successful	2	Granlees Point nest #1
1994	Successful	2	Granlees Point nest #1
1995	Occupied/Unsuccessful	0	Granlees Point nest #1
1996	Occupied/Unsuccessful	0	Granlees Point nest #1
1997	Successful	2	Granlees Point nest #1
1998	Occupied/Unsuccessful	0	Granlees Point nest #1
1999	Occupied/Unsuccessful	0	Granlees Point nest #1
2000	Successful	Unknown	Granlees Point nest #1
2001	Occupied/Unsuccessful	0	Granlees Point nest #1
2002	Occupied/Unsuccessful	0	Granlees Point nest #1
2003	Occupied/unsuccessful	0	Granlees Point nest #2
2004	Successful	1	Granlees Point nest #1

Source: SMUD 2004

Nesting attempts of known outcome at Union Valley Reservoir = 17

Summary known young produced at Union Valley Reservoir = 11

Young/known outcome at Union Valley Reservoir = 0.65

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The authors of the 2004 SMUD study state that nest failures at Union Valley Reservoir may be associated with late spring storms accompanied by unseasonable freezing temperatures and precipitation alternating between rain and snow. More data is necessary, however, to draw any firm conclusions related to weather effects on bald eagle nesting success (SMUD 2004).

1.11 Recreation and Bald Eagle Response at Union Valley Reservoir

Bald eagles also may be affected by recreation activity in the vicinity of active nests and critical winter roost sites (SMUD 2004). According to the National Bald Eagle Management Guidelines, bald eagle pairs react differently to human activity. Some are very tolerant, while others abandon nest sites in response to human activity, even at some distance (USFWS 2007b). There are a variety of potential factors, including visibility, duration, noise level, extent of area affected by the activity, prior expereinces with humans and others. The type of recreation activity can also play a role. Foot traffic has been shown to be particularly disturbing to eagles.

During the 2002-2004 study period, fishing was the most common recreational activity observed on Union Valley Reservoir year-round. Public use of the Reservoir was greatest during the summer months when camping, fishing, water skiing, wake boarding, jet-skiing, mountain biking, and off-road vehicle use are all found around the Reservoir. Winter recreation included camping, cross-country skiing, snowshoeing, snowmobiling, and fishing (SMUD 2004).

Boaters and campers were often observed in proximity to perched eagles, but usually appeared oblivious to the presence of eagles (SMUD 2004). The bald eagles at Union Valley Reservoir may have become habituated to the presence of boats but it is not clear at this time how boating activity during the breeding season may affect their foraging patterns and breeding behavior. The SMUD study notes that based on flushing responses of bald eagles to foot traffic the greatest potential for disturbance of nesting bald eagles at Union Valley Reservoir comes from the proximity of the bike path and Sunset and Fashoda campgrounds to the Granlees Point nest stand (SMUD 2004).

The ENF Bald Eagle Management Plan (ENF, 1999. unpublished data, cited in SMUD 2004) recommends a closure zone around the Granlees Point nest site from January 1 through August 15. The closure includes the nest tree stand, the nearby shoreline, and a portion of the existing bike trail. Closure notices are posted along the boundary of this zone and information is posted at campgrounds and boat launches around Union Valley Reservoir, as well as at the ENF Information Center and the Crystal Basin Information Center. In previous years, the closure area consisted of the shoreline adjacent to the nest area, as well as the nest stand, but did not restrict use of the cove adjacent to the nest stand. This cove receives a great deal of boat traffic and contributes to people using the restricted shoreline area. According to the Bald Eagle Management Plan, buoys were to be installed near the entrance to this cove in the fall of 1998 to restrict boat access during the closure period, and to initiate a 5-mph zone in the cove the remainder of the year (SMUD 2001). This work has not yet occurred.

The 2004 SMUD study notes that the paved public bike/pedestrian path that currently extends along the eastern side of Union Valley Reservoir from near Jones Fork Campground on the south to near Sacramento Municipal Utility District Upper American River Project 12 FERC Project No. 2101



Tells Creek on the north runs directly through the nest stand on Granlees Point. One of the purposes of this monitoring plan is, therefore, to provide the Forest Service with information for implementing necessary closures of the bike trail to prevent breeding disturbance. Information is also needed about the effects of boating upon bald eagles nesting at Union Valley Reservoir and the potential need for utilizing buoys or other methods of reducing disturbance from boating during the critical nesting period.

At the time of the study, the ENF had proposed an extension of this path around the entire perimeter of the Reservoir and directed an expansion of the Big Silver Group Campground and other new recreation facilities around the Reservoir (SMUD 2004). The study recommended that siting of the proposed extension of the bike/pedestrian path and any new recreation facilities should consider potential effects on bald eagles resulting from direct and indirect disturbance by recreationists, and diminished habitat suitability that may affect long-term viability of the Union Valley Reservoir nest territory. SMUD is currently studying designs for the bike path extension and considering effects to bald eagles.

2.0 Consultation

SMUD consulted with the Settlement Agreement Consultation Group in September 2014 to develop this Plan (meeting notes available). In addition, a draft of this plan, which incorporates comments received at the meeting referenced above, has been circulated among the Consultation Group for a 30-day review. Following that review, many comments were incorporated and some were discussed during meetings with the Consultation Group. There were several outstanding issues and SMUD submitted a revised draft of the plan in January of 2015 to the U.S. Forest Service (USFS), the California Department of Fish and Wildlife (CDFW), the U.S. Fish and Wildlife Service (USFWS) and the State Water Resources Control Board (SWRCB) (Agencies) for the required 90-day review and approval. There remained several outstanding issues with the plan following the Agency review so another meeting was held on May 4, 2015 to further discuss the plan. SMUD and Agencies came to agreement at the meeting and this version of the Bald Eagle Monitoring Plan reflects that agreement.

Prior to implementing this monitoring plan, SMUD will consult with the USFWS, USFS, and CDFW to verify the status of bald eagle territories located within or adjacent to the UARP FERC Project boundary (Project boundary). In the event new territories are discovered within or adjacent to the Project boundary, these will be integrated into the monitoring plan as well.



3.0 Monitoring Plan Objectives

The primary objectives and rationale for the bald eagle monitoring program, as described in USFS 4(e) Condition 31 and SWRCB WQC Condition 8.L are:

Coordinate with FS and FWS to continue monitoring bald eagle nest sites.

To ensure bald eagle nest sites are not being affected by Project-related activities. This monitoring will help determine if SMUD operations and maintenance activities; capital projects; or project-related recreation activities are adversely affecting bald eagle nesting success in the UARP. The results of the monitoring will inform the future management of bald eagles in the UARP area.

4.0 Study Area

Each year, monitoring will be conducted at UARP reservoirs with known nesting territories located within or adjacent to, the Project boundary (Figure 1). Currently these are limited to Union Valley Reservoir (active) and Loon Lake Reservoir (unknown occupation status). Because potential nesting habitat exists at Ice House Reservoir periodic surveys will be conducted here as well. Surveys will be conducted using observation points and methods which provide the least obtrusive presence of surveyors and are in accordance with protocols established in, *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004), and *Bald Eagle Breeding Survey Instructions* (CDFG 2010).

5.0 Methods

Annually, 30 days prior to the nesting season, SMUD will contact biologists at the USFS, USFWS and CDFW to notify them of the survey plan and schedule. Should the USFS (or other agencies) have biologists assigned to survey at locations within the UARP, SMUD will coordinate efforts to eliminate duplicative surveys. Any input from the USFWS and CDFW will be sought at this time as well.

5.1 Survey Frequency

SMUD will conduct nesting surveys at Union Valley Reservoir annually. Since relicensing surveys documented nesting activity at Loon Lake during 2003 and 2004, and the 2004 nesting attempt hatched two eaglets (although they died before fledging/while attempting to fledge), nesting surveys will be completed at Loon Lake annually for the first 3 consecutive years of License issuance (2016, 2017, and 2018). If any nesting activity is observed anytime during these three years of surveys,



regardless of success, nesting surveys will continue annually until there are three consecutive years without nesting activity. If no nesting activity is observed during any of the nesting surveys during the first three years of surveys, nesting surveys will be reduced to once every three years. If nesting is observed during the reduced survey frequency, surveys will resume on an annual basis. In addition, because Ice House Reservoir has potential to support nesting eagles, surveyors will perform monitoring here every three years, starting in the first year surveys are performed. If no nesting activity is observed, surveys will continue be conducted every three years; however, if nesting activity is observed, monitoring will be conducted annually until there are three consecutive years without nesting activity.

5.2 Survey Protocol

Surveys for new nests and at known nest sites will be conducted in accordance with the protocols referenced in Section 4. Known bald eagle nesting territories within the UARP will be surveyed at least three times annually during the breeding season (Figures 1 and 2) based on protocols for monitoring existing nest sites. Potential nesting habitat at Union Valley, Loon Lake and Ice House Reservoir will be surveyed with three survey visits based on protocols for searching for new bald eagle nests. New nest site searches will take place at all three reservoirs during the first year of surveys following the issuance of the FERC License (2016), and will be repeated according to the schedule in Section 5.1. If annual monitoring of a known nest fails to detect nesting activity in a given year, surveys of potential habitat at the reservoir will be surveyed annually as described in Section 5.1.

The initial survey will take place early in the nesting season (late February through March) to determine occupancy; then in mid-nesting season (late April/early May) to determine the presence of eggs or young (i.e., continued activity); and finally, late in the season (mid-June) to determine hatching success and the number of young fledged or near fledging (Jurek 1990). Observations will be made primarily using binoculars or spotting scopes from land-based vantage points and boats where needed. Monitors will document their observations using the California Bald Eagle Nesting Territory Form (Attachment 3) (CDFG 2010). Each of the three surveys will last one day, beginning at dawn and concluding in the mid- to late afternoon. Detailed notes will be kept on the activities, movements, locations, abundance, and behavior of bald eagles observed, including interactions with other species using the protocols and survey forms described in Jackman and Jenkins (2004). Additionally, detailed notes will be kept on levels and types of disturbance occurring in proximity to nest sites (e.g. proximity, periodicity and magnitude of foot traffic, bicycle traffic and boating traffic) and the response of nesting eagles to human activities. This observational information will help inform agencies about the adequacy of existing protection measures and need for new measures in response to project-induced recreation. New eagle nests discovered during the surveys will be mapped using GPS to create a GIS database and map.



5.3 Wintering and Night Roost Surveys

SMUD will conduct two winter night roost survey efforts during the 2015/2016 and 2016/2017 winter periods at Union Valley Reservoir. Surveys will be focused at the two night roost sites utilized by the territorial nesting pair during 2002-2004 located at Granlees Point and Sunset/Fashoda Peninsula. SMUD will conduct winter night roost surveys in December, January, and February of each winter period using the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004). Surveys will be conducted in the afternoon/early evening at each roost site, in an effort to determine if winter roosting activity is currently occurring in these areas. If roosts are located, the number of eagles will be recorded as they move from foraging to roosting habitat. These locations will be revisited the following morning, one-half hour before sunrise for at least two hours to count the number of eagles leaving the roost. If a stand is identified as a probable night roost, the area will be revisited during the day to search for any evidence of bald eagle use (feathers and/or castings) and the exact location is recorded onto a Global Positioning System (GPS). The survey forms derived by Jackman and Jenkins (2004) should be used to record survey data.

Winter foraging is important for bald eagles nesting in the spring as insufficient winter foraging due to disturbance can affect nesting success. Project activities, specifically recreation, conducted during the winter may affect roosting territorial eagles that may be nesting in the spring. Detailed notes will be kept on levels and types of disturbance occurring in proximity to roost sites (e.g. proximity, periodicity and magnitude of foot traffic, bicycle traffic and boating traffic) and the response of roosting eagles to human activities. The results of surveys can be used to inform SMUD and the agencies whether specific avoidance and minimization measures need to be implemented to protect Union Valley Reservoir winter night roost sites.



Figure 4. Chronology of bald eagle breeding and wintering activity in Northern California, with nesting survey periods shown in red (adapted from Jackman and Jenkins 2004).

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
Nest Surveys												
Courtship, Nest Initiation												
Egg Laying												
Incubation												
Hatching												
Nestlings												
Fledging												
Post Fledging												
Migration												

6.0 Reporting

Study output will include completed survey forms (as described above), GIS data for survey coverage and nest locations, and an annual report summarizing the UARP bald eagle monitoring. The report will include at minimum; the number and timing of surveys documentation of any courtship, incubating, and brooding behaviors observed; the number of nestlings and subsequent fledglings; and, maps and GIS data to show nests, and other important habitat points. Observational data on any observed response of nesting eagles to recreation use patterns will be reported as well. Also included will be any sightings of non-territorial bald eagles and any observations of ospreys or other raptors. Other information may include roosting and foraging sites; eagle behaviors; unusual project operations; unusual recreation activity; and incidents and cause of nest failures or mortalities, if applicable.

Abiotic data that may help to explain eagle nesting success or other observed behavior will be collected and reported as well. SMUD will provide data on reservoir storage levels for the year and list any operations, maintenance and capital projects in the vicinity of the eagle territories. Additionally, weather data will be reported. Weather is a significant factor in nesting success of eagles. In particular, the authors of the 2004 study noted in their report that nest failures may be largely due to late spring storms that bring heavy snowfall and rain during incubation (SMUD 2004). The degree to which human activity affects eagle behavior and nesting is highly dependent on a variety of additional variables. The monitoring report will document the success of eagles nesting at project reservoirs, the nest protection measures implemented, and where possible, determine the cause of any nest failures or change in use at the reservoirs. A summary of protection measures that were applied during the season, a description of recreation activities observed in proximity to a nest location, and a description of any emergency activities undertaken within a nest buffer and during a



Limited Operating Period (LOP) will be included. The report is intended to inform potential changes to existing buffers and LOPs.

SMUD will contact the Agency biologist within five days of positive nest survey results and will provide updates following successive nest site monitoring visits in order to allow for timely implementation of nest site buffers and LOPs. SMUD will submit survey forms to the Agencies by September 1 of each calendar year, covering the results of monitoring throughout that year. SMUD will submit a draft report to the Agencies on or before January 15 of the following year. SMUD will then convene the Annual Review of Ecological Conditions Meeting by April 1 of each year to discuss the draft report, after which SMUD will allow the Agencies at least 30 days to review and comment on the draft report. SMUD will also invite all members of the Consultation Group to attend the Annual Meeting, per the FERC License (FERC 2014) and the Settlement Agreement (SMUD et al. 2007).

The final annual report will be filed with FERC by June 30 each year. SMUD will include in the final report any comments and recommendations made by the Agencies on the draft report. If SMUD does not adopt a recommendation, the filing shall include SMUD's reasons based on project-specific information.

The SWRCB has requested that this Plan include "specific measureable criteria" to determine if resource objectives are being met (Condition 8.L. of the SWRCB 401 WQC found in Attachment 2). SMUD proposes to use the number of nesting attempts in the UARP per territory; if there are one or more successful fledging events, then resource objectives are successfully being met. If fledging does not occur, SMUD and the Agencies will attempt to determine the cause. If the cause is suspected to be related to Project operations or Project-related recreation, then SMUD and the Agencies will discuss potential reasons for the failure and determine whether there are actions that can be taken to minimize future nest failures.

7.0 Plan Revisions

If SMUD, USFS, CDFW, or SWRCB collaboratively determine that revisions should be made to the plan, SMUD will make any revisions to the Plan in coordination and consultation with the listed resource agencies. Any revisions to the plan must be approved by USFS, CDFW, and SWRCB. Any revisions shall be filed with FERC for approval prior to implementing.



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USFWS. 2009. Post-delisting Monitoring Plan for the Bald Eagle (Haliaeetus leucocephalus) in the Contiguous 48 States. U.S. Fish and Wildlife Service, Divisions of Endangered Species and Migratory Birds and State Programs, Midwest Regional Office, Twin Cities, Minnesota.



Attachment 1

From the FERC Order Issuing New License to SMUD for the Upper American River Hydroelectric Project, July 23, 2014:

Appendix B – Conditions filed by the U.S. Forest Service on June 8, 2008, pursuant to section 4(e) of the Federal Power Act, for the Upper American River Project No. 2101

USFS (4e) Condition 31 – Bald Eagle Monitoring

Within 6 months of license issuance, the licensee shall develop a bald eagle monitoring plan in consultation with FS, CDFG, FWS, and SWRCB. The licensee shall provide FS, CDFG, FWS, and SWRCB a 90-day review and approval period for the monitoring plan prior to implementation. The licensee shall implement the plan upon approval.

Method: Coordinate with FS and FWS to continue monitoring bald eagle nest sites.

Frequency: Annually.

Rationale: To ensure bald eagle nest sites are not being affected by Project-related activities.



Attachment 2

Appendix A Water Quality Certificate Conditions for the Upper American River Project issued by the California State Water Resources Control Board on October 4, 2013:

Condition 8.L. Bald Eagle Monitoring

8.L. Bald Eagle Monitoring

Within six months of license issuance, the Licensee shall develop a bald eagle monitoring plan in consultation with USFS, CDFW, USFWS, and State Water Board. The bald eagle is listed as a fully protected endangered species under the California Endangered Species Act (CESA). Further, the Rationale Report directs that measures be taken to maintain, protect and enhance populations of sensitive, threatened and endangered plant and wildlife species. The bald eagle monitoring plan will at a minimum include: (i) a statement of goals and objectives; (ii) a description of all proposed monitoring and monitoring methods; and (iii) specific, measureable criteria to be used to evaluate the data collected and objectively assess the continued viability of this resource. The Licensee shall provide the Deputy Director with any comments provided by the agencies during the consultation process. The Licensee shall submit the plan to the Deputy Director for review and approval after agency consultation. The Licensee shall provide the Deputy Director may require modifications as part of the approval. The Licensee shall file the Deputy Director's approval, together with any required plan modifications, with the Commission.

Method: Use a method approved by the Deputy Director, developed in consultation with USFS, CDFW and USFWS, to continue monitoring bald eagle nest sites to determine if bald eagles are being affected by UARP-related activities.

Frequency: Annually for the term of the license and any extensions

STATE OF CALIFORNIA THE RESOURCE AGENCY DEPARTMENT OF FISH AND GAME

BALD EAGLE BREEDING SURVEY INSTRUCTIONS

The breeding season of bald eagles in California extends primarily from February through July. Each year cooperating agencies, organizations, and private individuals participate in a statewide monitoring program to document nesting activities at each nesting territory. In 1997, 160 recently active breeding territories were surveyed, and the number increases yearly.

Annual breeding season surveys are an important part of the population recovery effort. Survey information is used by resource agencies to aid breeding territory management or protection activities. Additionally, population status and trends must be monitored annually to provide the data needed for assessing population recovery.

Specific assignments and scheduling of observer time are usually handled at the agency district or regional office level. In general, agencies are responsible for surveys or territories on or near their own lands, with Department of Fish and Game also surveying on private lands. Field personnel should coordinate with other agencies or volunteers to avoid duplication of effort or to arrange for survey help.

The bald eagle breeding population is increasing annually. So, it is important that suspected new nesting territories be adequately checked, especially early in the breeding season.

Territories should be checked at least three times during the nesting season, although more frequent checking is preferred. Emphasis should be placed on checking during incubation and early nesting periods.

- 1. Early March (early incubation) Territories in northern California should be checked in the first half of March, if possible, or as soon thereafter as road or weather conditions allow. The purpose of the first check is to determine whether a territory is occupied (record presence of adults, courtship behavior, evidence of nest repair or construction, incubation).
- 2. Late April or early May (early nesting period) This check is needed to confirm that a territory is unoccupied, or if occupied in March, to determine whether the breeding pair is still tending the nest (incubating eggs or tending young nestlings).
- 3. Mid June (late nesting period) The main purpose of this check is to determine how many nestlings are approaching fledgling age.

Survey dates maybe modified from these recommended time periods if the territories can be checked more frequently or if particular breeding pairs are known to begin nesting especially early or late in the season.

We recommend that observers report the stage of development of nestlings in accordance with <u>An Illustrated Guide for</u> <u>Identifying Developmental Stages of Bald Eagle Nestlings in the Field</u>, by G.P. Carpenter (April 1990). This booklet is available from the San Francisco Zoological Society, Sloat Blvd. At the Pacific Ocean, San Francisco, CA 94132 (415-753-7080).

SUBMITTAL OF SURVEY FORMS

Please report observations on the CALIFORNIA BALD EALGE NESTING TERRITORY FORM (revised 4/2010).

Please mail all completed forms by September 1 of the survey year to:

California Department of Fish and Game Wildlife Branch 1812 Ninth St. Sacramento, CA 95814 ATTN: Carie Battistone

Forms will be maintained in Department files and annual survey results will be compiled on the basis of these reports. If you have any questions please contact Carie Battistone at the above address or at <u>cbattistone@dfg.ca.gov</u>. Electronic forms can be found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

California Department of Fish and Game CALIFORNIA BALD EAGLE

NESTING TERRITORY SURVEY FORM

Revised 4/2010

Territory Code:				
County:		Survey Year:		
Property Owner:		If USFS:		National Forest
Name (or general location	of territory):			
Name of nearest water bod	y:			
Location of Nest Site: T	R Sec	1/4	1/16	
UTM E:	UTM N:	_	Zone:	
No. of nests in territory –	Intact:	Remnant:	_	
Nest Tree: Species:	1	Year last Used	•	
Nest: Year last used				
NOTE: Please attach a ma	p showing the l	ocation of any	newly docum	ented nest tree.

Describe tree and nest condition and size, and add other remarks:

For each visit to a territory, note, in detail, the times, number and age of birds, behavior of birds (lying, perching, etc.), evidence of nesting (nest maintenance, courtship, incubation posture), disturbances, and other pertinent information:

Initials of Observer	Date of Visit	Observations

Initials of Observer	Date of Visit	Observations
-		11/1 A
	(Attach ad	ditional pages, if necessary)
General Remarks:		
How many adult Was there evide Were adults see Were adults in in Number of nestl Failed during inc	ts were seen in the territory? nce of nest repair or construct in the nest? Yes No ncubating posture? Yes No ings observed? cubation: o	
'hone: ()	Fax: ()	Email:
lail all completed forms by	September 1 of survey year to:	
	California Depa Wildlife Branch 1812 Ninth St. Sacramento, CA ATTN: Carie B	A 95814

ADDITIONAL OBSERVATIONS:

T	erritory	2.1
1.10	errnorv	•
-	CILICUL J	•

Year:

Initials of Observer	Date of Visit	Observations (continued)

152 FERC ¶ 62,012 UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Sacramento Municipal Utility District

Project No. 2101-102

ORDER APPROVING BALD EAGLE MONITORING PLAN PURSUANT TO ARTICLE 401a

(Issued July 2, 2015)

1. On May 21, 2015, Sacramento Municipal Utility District, licensee for the Upper American River Hydroelectric Project No. 2101, filed a bald eagle monitoring plan (plan) pursuant to the requirements of Article 401a of the project license.¹ The project is located on the Rubicon River, Silver Creek, and South Fork American River in El Dorado and Sacramento counties California. The project occupies federal land.

BACKGROUND

2. Article 401a of the project license requires the licensee to file, within 10 months of license issuance, a bald eagle monitoring plan.² The licensee is required to consult with the U.S. Forest Service, the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and the California State Water Resources Control Board (collectively referred to as agencies) on the plan. The plan must include at a minimum: (1) a statement of goals and objectives; (2) a description of all proposed monitoring and monitoring methods; and (3) specific, measureable criteria to be used to evaluate the data collected and objectively assess the continued viability of this resource.

¹ Order New License, 148 FERC ¶ 62,070 (issued July 23, 2014).

² Article 401a encompasses conditions of the license found in the State Water Resources Control Board's final section 401 Water Quality Certification (WQC) conditions and the U.S. Forest Service's final section 4(e) conditions. WQC condition no. 8.L and Forest Service condition no. 31.13 require the licensee to file the plan with their respective agencies, for approval, within six months of license issuance.

Project No. 2101-102

PROPOSED PLAN

3. The proposed plan provides background information on the project and the status of the bald eagle nationally, regionally, and within the project vicinity. It also provides a brief history of studies and observations a the Union Valley Reservoir, Loon Lake, and the Ice House Reservoir. The plans objective is to ensure bald eagle nest sites are not being affected by project-related activities and to utilize the monitoring methods described to determine if maintenance activities, capital projects, or project recreation are adversely effecting bald eagle nesting success at the project. Lastly, the licensee will utilize the results to inform management of bald eagles in the project vicinity.

4. The licensee proposed to conduct monitoring at the Union Valley Reservoir annually and will conduct two winter night surveys during 2015/2016 and 2016/2017. The licensee will survey Loon Lake annually for the first three consecutive years (2016, 2017, and 2018). If nesting occurs during the three years at Loon Lake, the licensee will continue surveying annually until there are three consecutive years without nesting activity, after which the licensee will reduce surveying to once every three years. If nesting is observed during the reduced survey frequency, the licensee will resume surveys on an annual basis. The licensee will conduct surveys at the Ice House Reservoir every three years, starting in 2016. If no nesting is observed, surveys will remain at three-year intervals. However, if nesting activity is observed, the licensee will survey annually until there are three consecutive years without nesting activity, after which the licensee will reduce survey frequency, the licensee will survey

5. Protocols for survey observations will follow those established in *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004) and *Bald Eagle Breeding Survey Instructions* (California Department of Fish and Game 2010). The licensee will notify the agencies 30 days prior to nesting season of the survey plan and schedule. The licensee will begin annual surveys in late February through March to determine occupancy, late April/early May to determine presence of eggs or young, and conclude in mid-June to determine hatching success and the number of young fledged or near fledging.

6. The licensee will complete all surveys by utilizing survey forms (attached as part of the plan), geographic information system (GIS) data for area coverage and nest locations, and an annual report. The report will include at a minimum: (1) the number and timing documenting any courtship, incubating, and brooding behaviors observed; (2) the number of nestlings and subsequent fledglings; (3) maps and GIS data to show nests and other important habitat points; and (4) a summary of protection measures that were applied during the season, including a description of any emergency activities taken within the next buffer and during a limited operating period. The licensee may include other information, for example: roosting and foraging sites; eagle behaviors; unusual

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project operations; unusual recreation activity; and incidents/cause of nest failures or mortalities, if applicable.

7. The plan proposes to use the number of nesting attempts within the project vicinity, per territory, to determine if the resource objects are being met. If fledgling does not occur, the licensee in consultation with the agencies will attempt to determine the cause and potential future actions to minimize future nesting failures.

8. The licensee will submit the survey forms by September 1 of each calendar year and the draft report by January 15 of the following year to the agencies. The licensee will conduct an Annual Review of Ecological Conditions Meeting by April 1 of each year to discuss the draft report as required by the project license. The licensee will file the final annual report after incorporating the comments from the agencies and the attendees of the annual meeting, with the Commission, by June 30 each year.

AGENCY CONSULTATION

9. The licensee provided the agencies a copy of the final plan incorporating the comments received during consultation on May 7, 2015. The U.S. Forest Service approved the plan via letter on May 13, 2015. The California State Water Resources Control Board responded via letter dated May 18, 2015, stating that the proposed plan incorporated previous comments and is approved. Both the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service responded via email dated May 8, 2015, stating the licensee incorporated all comments and the plan is approved.

CONCLUSION

10. Article 401a requires the licensee to consult with agencies to finalize and submit, for Commission approval, a bald eagle monitoring plan. The filed plan meets the requirements of Article 401a and has been approved by all the necessary agencies. As such, ordering paragraph (A) approves the plan.

The Director orders:

(A) The bald eagle monitoring plan, filed by the Sacramento Municipal Utility District, for the Upper American River Hydroelectric Project No. 2101on May 21, 2015, required by Article 401a of the license, is approved.

Project No. 2101-102

(B) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825*l* (2012), and the Commission's regulations at 18 CFR § 385.713 (2014). The filing of a request for hearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Robert J. Fletcher Chief, Land Resources Branch Division of Hydropower Administration and Compliance

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