

Bald Eagle Monitoring Report

Sacramento Municipal Utility District

Hydro License Implementation • June 2017
Upper American River Project
FERC Project No. 2101

TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND	4
2.0 MONITORING PLAN OBJECTIVES	4
3.0 STUDY AREA AND SURVEY FREQUENCY	4
4.0 METHODS	7
4.1 Winter Night Roost Surveys	7
4.2 Breeding Season Surveys	9
5.0 RESULTS	11
5.1 Winter Night Roost Surveys	11
5.2 Breeding Season Surveys	12
5.2.1 Union Valley Reservoir	12
5.2.2 Ice House Reservoir	16
5.2.3 Loon Lake Reservoir	17
6.0 DISCUSSION	21
6.1 Winter night roost surveys	21
6.2 Breeding season surveys	21
6.2.1 Union Valley Reservoir	21
6.2.2 Ice House Reservoir	22
6.2.3 Loon Lake Reservoir	22
7.0 UPCOMING SURVEY PLANS	23
8.0 LITERATURE CITED	23

LIST OF TABLES

Table 1.	Bald Eagle Observations During 2015/2016 Winter Night Roost Surveys at Union Valley Reservoir	11
Table 2.	Bald Eagle Observations During the 2016 Breeding Season Surveys at Union Valley Reservoir	12
Table 3.	Bald Eagle Observations During the 2016 Breeding Season Surveys at Ice House Reservoir	17
Table 4.	Bald Eagle Observations During the 2016 Breeding Season Surveys at Loon Lake Reservoir	18

LIST OF FIGURES

Figure 1.	Bald Eagle Monitoring Study Area Overview	6
Figure 2.	Land-based Vantage Points used for Bald Eagle Monitoring on Union Valley Reservoir and Ice House Reservoir	8
Figure 3.	Land-based Vantage Points used for Bald Eagle Monitoring on Loon Lake Reservoir.....	10
Figure 4.	Bald Eagle Activity Sites at Union Valley Reservoir	14
Figure 5.	Bald Eagles in Foraging Perch near Sunset Campground at Union Valley Reservoir.....	15
Figure 6.	Bald Eagle Nest in Sunset Campground at Union Valley Reservoir	15
Figure 7.	Bald Eagle Nestling and Adult in Sunset Campground at Union Valley Reservoir	16
Figure 8.	Bald Eagle Activity Sites (Stationary) at Loon Lake Reservoir.....	19
Figure 9.	Potential Bald Eagle Nest at Loon Lake Reservoir	20
Figure 10.	Potential Bald Eagle Nest at Loon Lake Reservoir	20

LIST OF APPENDICES

Attachment 1	State Water Resources Control Board section 401 Water Quality Certification for the UARP	24
Attachment 2	U.S. Department of Agriculture, Forest Service section 4 (e) Condition 31 for the UARP	26
Attachment 3	Bald Eagle Monitoring Forms	28
Attachment 4	Incidental Observations of Avian Species	29

Acronyms and Abbreviations

Acronym	Definition
CDFW	California Department of Fish and Wildlife
FERC	Federal Energy Regulatory Commission
GPS	Global Positioning System
SMUD	Sacramento Municipal Utility District
SWRCB	State Water Resources Control Board
UARP	Upper American River Project
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION AND BACKGROUND

This Bald Eagle Monitoring Report (Report) addresses monitoring requirements set forth in Sacramento Municipal Utility District's (SMUD) Bald Eagle Monitoring Plan (SMUD 2015). The requirements for this Plan are found in State Water Resources Control Board (SWRCB) Condition 8.L, and U.S. Forest Service (USFS) 4(e) Condition 31, located in Appendices A and B, respectively, of the Federal Energy Regulatory Commission's (FERC) Order Issuing New License for the Upper American River Project (UARP), dated July 23, 2014 (Attachments 1 and 2). The Plan was developed in consultation with the SWRCB, USFS, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Services. FERC approved the Plan on July 2, 2015. Results of bald eagle monitoring conducted in late 2015 and the first half of 2016 are provided in this Report.

The UARP lies within El Dorado and Sacramento counties, primarily within lands of the Eldorado National Forest. The UARP consists of three major storage reservoirs: Loon Lake, Union Valley, and Ice House (with a combined capacity of approximately 379,000 acre-feet), eight smaller regulating or diversion reservoirs, and eight powerhouses. The UARP also includes recreation facilities containing over 700 campsites, five boat ramps, hiking paths, and bicycle trails at the reservoirs.

2.0 MONITORING PLAN OBJECTIVES

As described in USFS 4(e) Condition 31 and SWRCB WQC Condition 8.L (Attachments 1 and 2), the primary objectives and rationale for the bald eagle monitoring program are to coordinate with the CDFW, USFS, and USFWS to continue monitoring bald eagle nest sites and to ensure that bald eagle nest sites are not being adversely affected by Project-related activities. The results of the monitoring are intended to inform future bald eagle management in the UARP area.

3.0 STUDY AREA AND SURVEY FREQUENCY

The Bald Eagle Monitoring Plan (SMUD 2015) specifies that surveys will be conducted at Union Valley Reservoir, Loon Lake Reservoir, and Ice House Reservoir (Figure 1).

- Nesting surveys will be conducted at Union Valley Reservoir annually. In addition, two winter night roost surveys will be conducted at Union Valley Reservoir during the 2015/2016 and 2016/2017 winter seasons.
- Nesting surveys will be completed at Ice House Reservoir once every three years (starting in 2016). If no nesting activity is observed at Ice House Reservoir, surveys will continue to be conducted once every three years. If nesting activity is observed at Ice House Reservoir, monitoring will be conducted annually until there are three consecutive years without nesting activity.

- Nesting surveys will be completed at Loon Lake annually for the first three consecutive years of license issuance (2016, 2017, and 2018). If any nesting activity is observed at this reservoir during these three years of surveys, regardless of nesting success, nesting surveys will continue annually until there are three consecutive years without nesting activity. If no nesting activity is observed during the three consecutive years of surveys, nesting survey frequency at Loon Lake Reservoir will be reduced to once every three years.

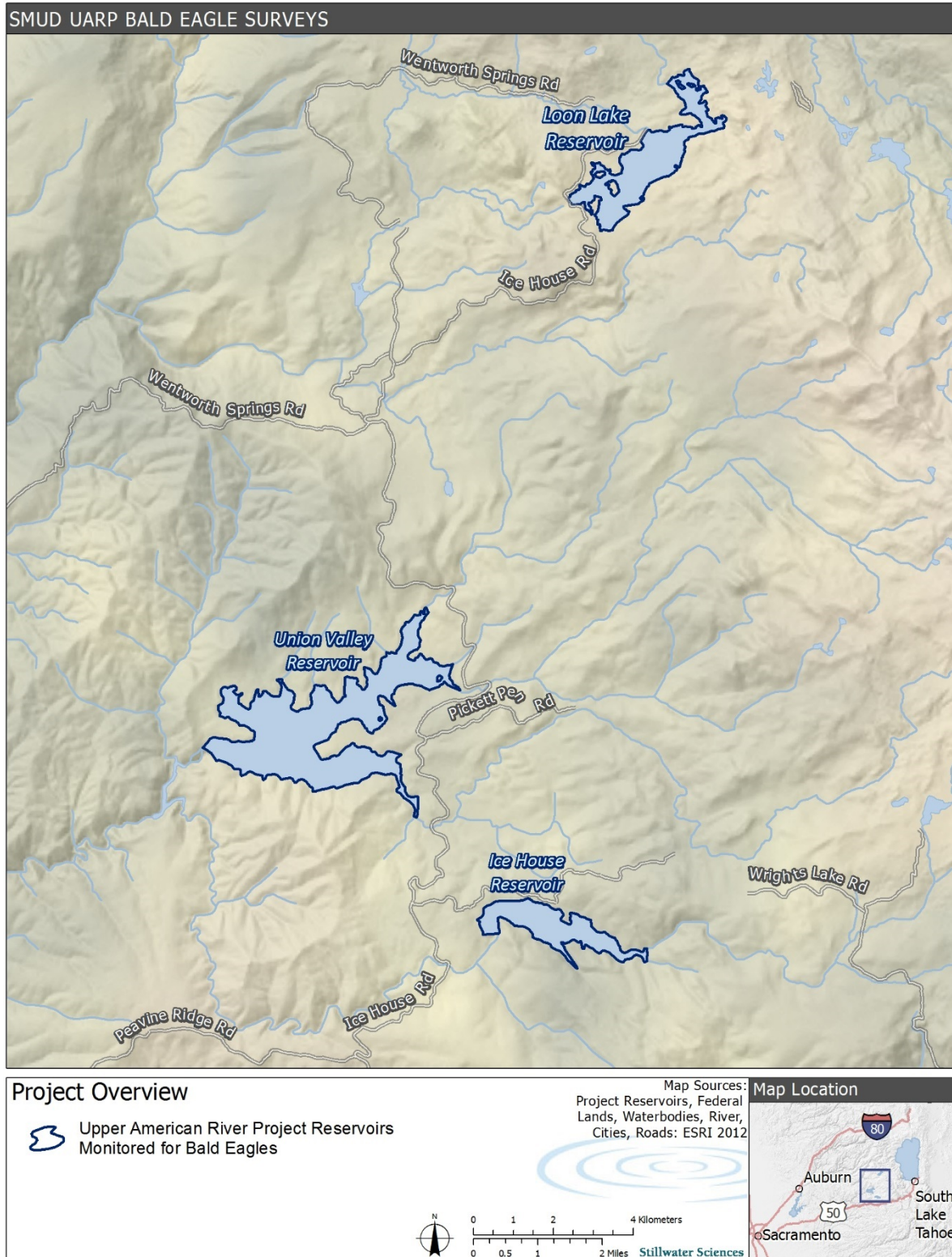


Figure 1. Bald Eagle Monitoring Study Area Overview

4.0 METHODS

4.1 WINTER NIGHT ROOST SURVEYS

Winter night roost surveys were conducted in December 2015 and January 2016 at Union Valley Reservoir in accordance with methods described in the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004). Surveys were conducted in the afternoon/early evening and were focused on Granlees Point and Fashoda Sunset Peninsula, where night roosting of a territorial pair of bald eagles was previously observed during surveys conducted between 2002 and 2004 (SMUD 2004). Per the UARP Bald Eagle Monitoring Plan, if bald eagles were observed entering a potential roost area during the evening survey in 2015/16, a follow-up survey lasting at least two hours and beginning one-half hour before sunrise was conducted the next morning. Observations were made using binoculars and/or a spotting scope from a boat and land-based vantage points accessed by vehicle and/or foot (Figure 2). If additional activity was observed, the potential roost area was visited on foot to search for signs of bald eagle use. Detailed data regarding the location, age class, activity, movement, and behavior of bald eagles were recorded and notes were taken on incidental observations of other avian species and recreational activities on the day of the survey.

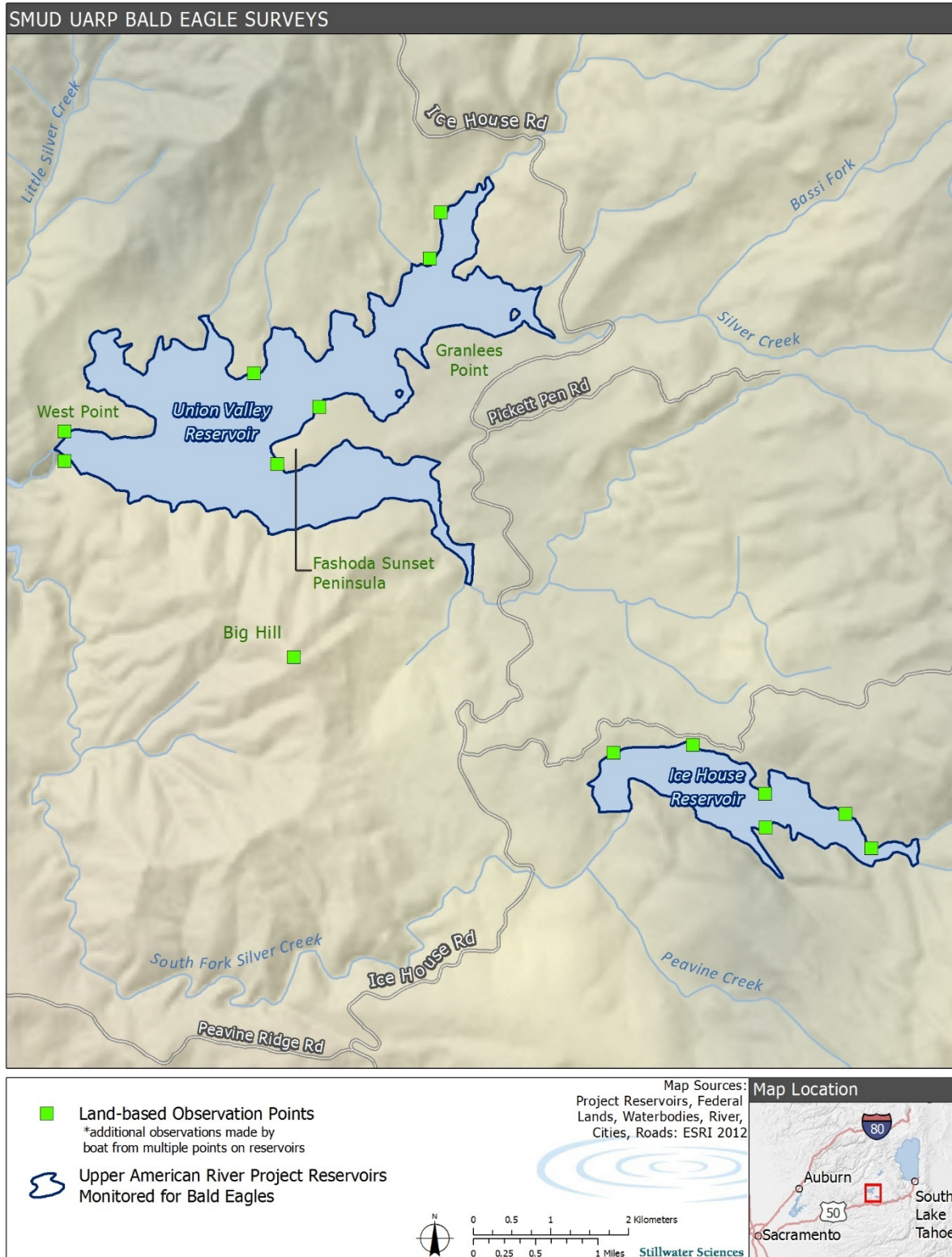


Figure 2. Land-based Vantage Points used for Bald Eagle Monitoring on Union Valley Reservoir and Ice House Reservoir

4.2 BREEDING SEASON SURVEYS

Surveys for new nests and at known nest sites were conducted in accordance with protocols described in the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004) and *Bald Eagle Breeding Survey Instructions* (CDFG 2010). Where possible (i.e., weather-related conditions permitting), surveys were conducted at each of the three reservoirs during the following time periods: late February through March (early breeding season), late April through May (mid-breeding season), and early June to early July (late breeding season). Surveys began at dawn and concluded in the late afternoon. Historical nest sites documented during relicensing surveys conducted between 2002 and 2004 (SMUD 2004) were revisited and other suitable habitat surrounding each reservoir was evaluated for signs of bald eagle nesting activity. Observations were made using binoculars and/or a spotting scope from a boat and land-based vantage points accessed by vehicle and/or foot (Figures 2 and 3). Detailed data regarding the location, age class, activity, movement, and behavior of bald eagles were recorded and notes were taken on incidental observations of other avian species and recreational activities on the day of the survey. Bald eagle perches and nests located during the surveys were mapped using a handheld Global Positioning System (GPS) unit.

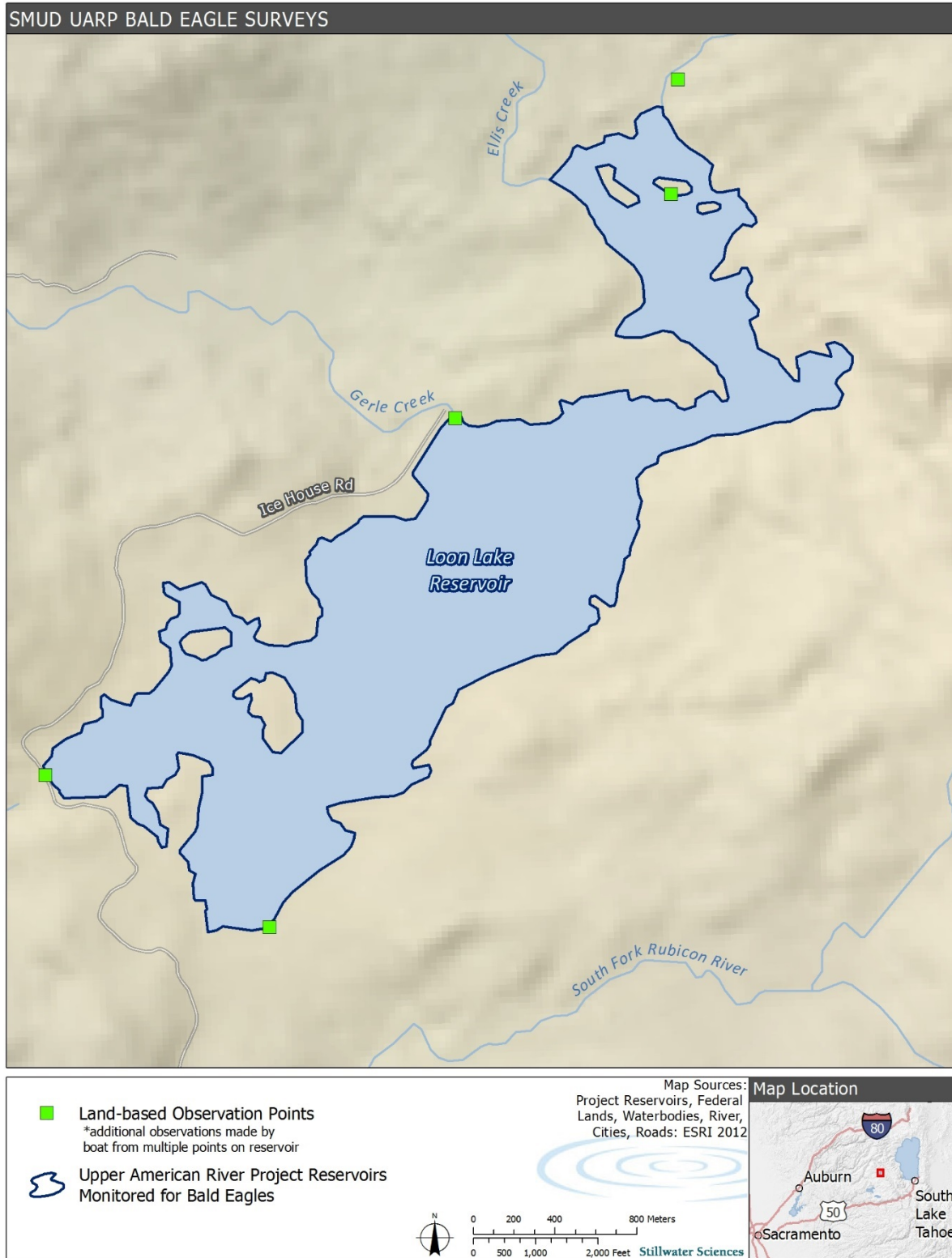


Figure 3. Land-based Vantage Points used for Bald Eagle Monitoring on Loon Lake Reservoir

5.0 RESULTS

5.1 WINTER NIGHT ROOST SURVEYS

The first winter night roost survey at Union Valley Reservoir was conducted on December 16, 2015. No bald eagles were observed near Sunset Fashoda Peninsula or Granlees Point during this survey. One adult male eagle was observed flying west into the trees along the southern edge of West Point (Table 1, Figure 2). In accordance with the survey protocol, a follow-up visit and stand inspection for this detection was performed the morning of December 17, 2015. A total of eight bald eagle observations were made during the follow-up visit, although two of these observations may have been repeat detections of eagles previously noted earlier that morning (Table 1). No obvious sign of roosting was observed during the stand inspection on West Point, although several suitable snags and roost trees were noted. There were several inches of fresh snowfall on the ground, which may have obscured evidence of roosting. A second night roost survey was performed on January 26, 2016. No eagles were observed during this survey.

Table 1. Bald Eagle Observations During 2015/2016 Winter Night Roost Surveys at Union Valley Reservoir

Date (Time)	Number of Eagles	Age Class	Notes
12/16/15 (16:02)	1	Adult	Flying north from southeastern shoreline of West Point
12/17/15 (07:29)	1	Juvenile (2 nd year)	Flying west from southeast shoreline of Union Valley Reservoir
12/17/15 (07:37)	1	Juvenile (1 st year)	Flying from West Point toward hills southeast of Union Valley Dam
12/17/15 (08:17)	2	Adults	Flying west over saddle north of Junction Reservoir
12/17/15 (08:36)	1	Juvenile (2 nd year)	Foraging near Union Valley Dam
12/17/15 (08:45)	2*	Adult, Juvenile (1 st year)	Adult female with carp. Pair flew along south edge of West Point, then separated. Adult flew north over West Point and juvenile into trees southeast of Union Valley Dam

*Based on age and point of origin, these birds may be repeat observations of birds observed earlier that morning.

5.2 BREEDING SEASON SURVEYS

5.2.1 Union Valley Reservoir

Surveys for bald eagles during the breeding season were conducted at Union Valley Reservoir on the following dates in 2016: March 2, May 11, and June 28. Table 2 summarizes bald eagle observations made during the surveys. Since the reservoir was visited on three separate occasions during the breeding season, it is assumed that some of these observations were repeat sightings of birds observed during previous visits.

Table 2. Bald Eagle Observations During the 2016 Breeding Season Surveys at Union Valley Reservoir

Date (Time)	Number of Eagles	Age Class	Notes
03/02/16 (09:15)	2	Adults	Pair perched in dominant sugar pine on Fashoda Sunset Peninsula
03/02/16 (10:20)	1	Juvenile (3 rd year)	Flying east past Fashoda Sunset Peninsula toward Granlees Point (adults perched in sugar pine followed in pursuit)
03/02/16 (15:30)	1	Adult	Perched in snag southeast of Union Valley Dam
05/11/16 (07:15)	1	Adult	Female occupying nest in dominant ponderosa pine in Sunset Campground
05/11/16 (11:30)	2	Adults	Pair soaring above transmission line west of West Point
06/28/16 (06:15)	2	Adults	Pair flying east toward hills on south side of Union Valley Reservoir
06/28/16 (07:10)	1	Adult	Foraging near cove southeast of Union Valley Dam
6/28/16 (08:30)	2	Juveniles	Nestling in Sunset Campground nest; fledgling heard begging nearby
6/28/16 (09:30)	1	Adult	Male with food delivery to Sunset Campground nest
6/28/16 (13:00)	1	Adult	Perched in ponderosa pine adjacent to boat launch near West Point
6/28/16 (15:30)	1	Adult	Soaring over Sunset Campground

Historical nest sites located on Granlees Point (Figure 4) were visited during each of the 2016 surveys and evaluated for signs of bald eagle nesting activity. No evidence of bald eagle nesting was observed during these visits; however, a bald eagle nest was located in Sunset Campground approximately one mile west of Granlees Point (Figure 4). A pair of bald eagles was observed perched in a dominant sugar pine and behaving territorially in this area during the early breeding season visit and the nest was located in a nearby ponderosa pine during the mid-season breeding survey (Table 2, Figures 4 through 6). During the late season breeding survey, a fledgling was heard (but not seen) and a nestling was observed in the nest (Table 2, Figure 7). A subsequent visit conducted by USFS biologists confirmed that the second chick fledged in early July.

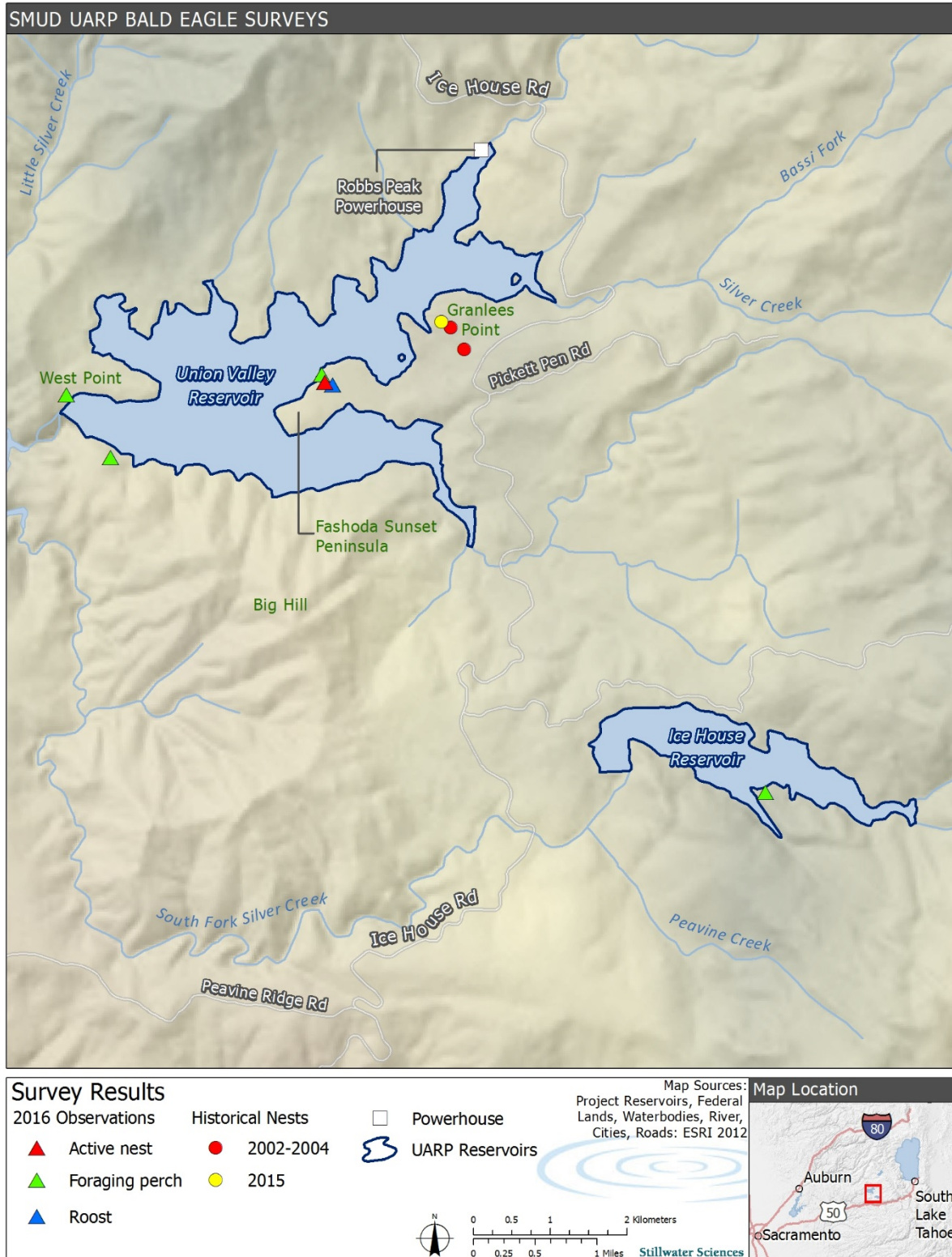


Figure 4. Bald Eagle Activity Sites at Union Valley Reservoir and Ice House Reservoir (2016)



Figure 5. Bald Eagles on Foraging Perch near Sunset Campground at Union Valley Reservoir



Figure 6. Bald Eagle Nest in Sunset Campground at Union Valley Reservoir



Figure 7. Bald Eagle Nestling and Adult in Sunset Campground at Union Valley Reservoir

5.2.2 Ice House Reservoir

Surveys for bald eagles during the breeding season were conducted at Ice House Reservoir on the following dates in 2016: March 1, May 13, and June 30. Table 3 summarizes bald eagle observations made during the surveys. No bald eagle nesting activity was observed at Ice House Reservoir during the surveys; however, a pair of third-year juvenile bald eagles were observed during the mid-breeding season survey (Table 3, Figure 4).

Table 3. Bald Eagle Observations During the 2016 Breeding Season Surveys at Ice House Reservoir

Date (Time)	Number of Eagles	Age Class	Notes
05/13/16 (08:00)	2	Juveniles (3 rd year)	Perched in opposite sides of dominant sugar pine on south side of reservoir
05/13/16 (11:00)	1	Juvenile (3 rd year)	Flying west along south shore of reservoir toward Ice House Dam (likely one of the previously sighted juveniles)

5.2.3 Loon Lake Reservoir

Loon Lake Reservoir was visited on February 29, 2016 to evaluate conditions; however, an early breeding season survey was not conducted because the reservoir was frozen and covered with snow, which temporarily eliminated primary bald eagle foraging habitat and would preclude nesting. Surveys were conducted at Loon Lake Reservoir during the breeding season on May 12 and June 29, 2016. Table 4 summarizes bald eagle observations made during the surveys. A potential nest was located in a dominant Jeffrey pine approximately 400 feet from the Rubicon Trail and near the historical nest site that was documented during relicensing surveys on the south side of the reservoir (Figure 8). When first located, the nest appeared to be either partially built or a remnant from a previous attempt (Figure 9). When the potential nest was revisited during the next survey, it had been expanded (Figure 10). Nevertheless, despite extended observation, no bald eagles were seen at or near this potential nest during the surveys. A nearby roost, however, was located by the presence of whitewash and bald eagles feathers (Figure 8). SMUD staff confirmed that the nest was empty while on a helicopter flight in the area on July 5, 2016. The pair of adult bald eagles observed in a foraging perch on the northeast end of the reservoir during the mid-breeding season survey (Table 4, Figure 8) may be associated with this unsuccessful nesting attempt, as a large area surrounding the foraging perch at that end of the reservoir was canvassed during both visits and no evidence of nesting was observed.

Table 4. Bald Eagle Observations During the 2016 Breeding Season Surveys at Loon Lake Reservoir

Date (Time)	Number of Eagles	Age	Notes
05/12/16 (08:00)	2	Adults	Perched in ponderosa pine along northeast end of reservoir
05/12/16 (10:45)	1	Juvenile (3 rd or 4 th year)	Flying north over northeast end of reservoir
05/12/16 (11:15)	1	Juvenile (2 nd year)	Flying west toward Loon Lake Dam

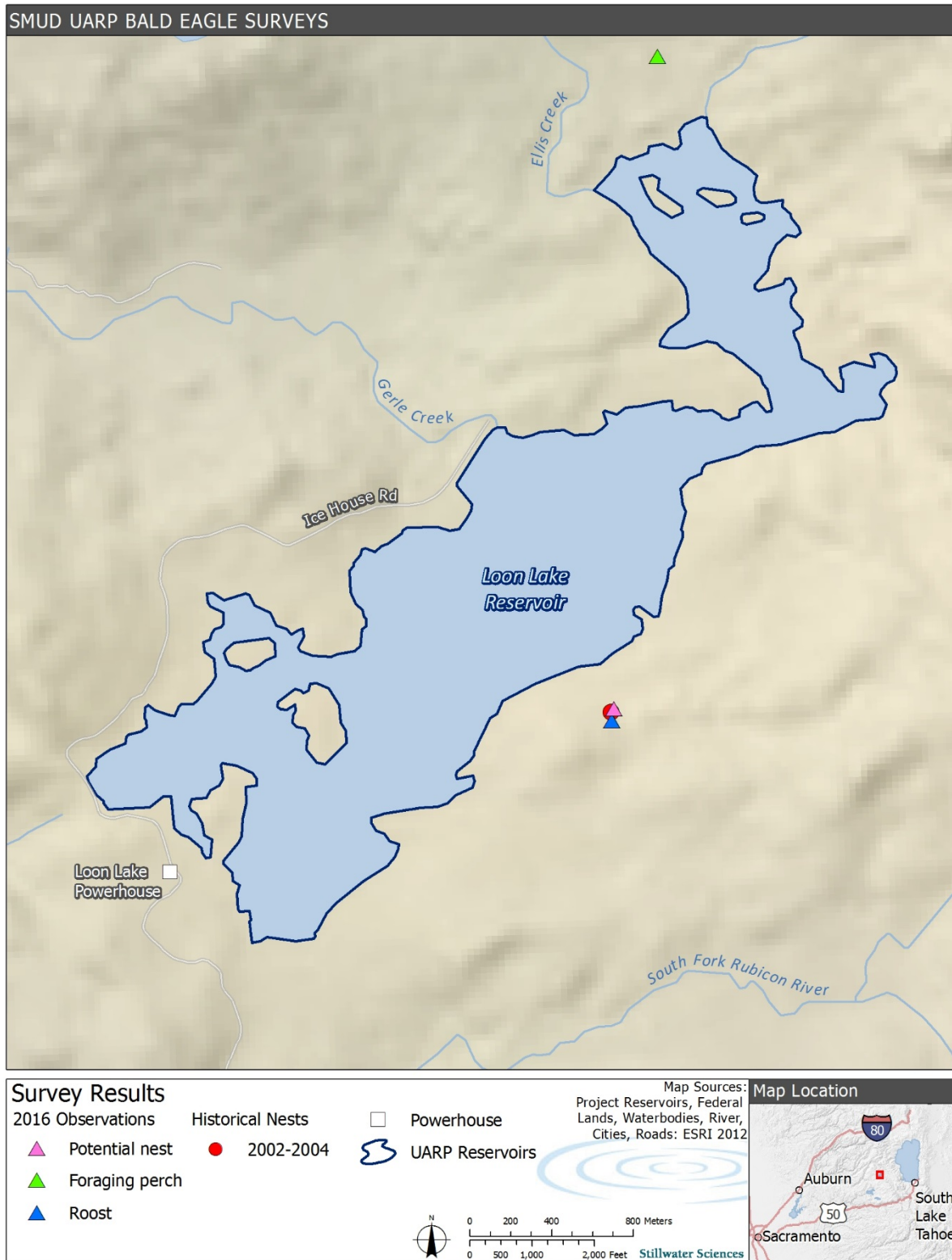


Figure 8. Bald Eagle Activity Sites at Loon Lake Reservoir



Figure 9. Potential Bald Eagle Nest at Loon Lake Reservoir (May 12, 2016)



Figure 10. Potential Bald Eagle Nest at Loon Lake Reservoir (June 29, 2016)

6.0 DISCUSSION

6.1 WINTER NIGHT ROOST SURVEYS

The results of the 2015/2016 winter night roost surveys suggest that large-scale colonial winter night roosting as described in the survey protocol (Jackman and Jenkins 2004) is not currently occurring at Union Valley Reservoir. This is consistent with observations made during the relicensing surveys, in which a single pair of bald eagles was observed roosting on Granlees Point in the fall (SMUD 2004).

Recreational activity on and around Union Valley Reservoir during the night roost surveys was extremely limited. All campgrounds around the reservoir were closed and traffic consisted of an occasional vehicle seen driving across Union Valley Dam. Evidence of limited snowmobile use near a cabin on the northwest shore of the reservoir was noted during the second survey. Other than the boat used by surveyors, there were no boats on the reservoir during either survey. Recreational activity, therefore, did not appear to be a factor for bald eagle winter night roosting or detection of bald eagles around Union Valley Reservoir in the 2015/2016 season.

6.2 BREEDING SEASON SURVEYS

6.2.1 Union Valley Reservoir

The results of the breeding season surveys indicate that bald eagles continue to use the habitat surrounding Union Valley Reservoir for reproduction. Weather and/or reservoir levels did not appear to be a factor for bald eagle nesting at Union Valley Reservoir during the 2016 breeding season. During the breeding season, reservoir levels ranged from approximately 4,825 to 4,870 feet above mean sea level (CDWR 2016 [RBP]) and the main body of the reservoir did not freeze over for any significant length of time. Cumulative precipitation at Union Valley Reservoir during the breeding season was approximately 35 inches, with the majority of it falling in the form of rain (CDWR 2016 [RBP]). The most significant accumulation (approximately 30 inches) occurred before the end of March and a series of spring storms brought an additional 5 inches of precipitation in April and May. Average air temperatures remained above freezing during these late-season events (CDWR 2016 [RBP]). Snowpack (as measured by water content) at Robbs Peak Powerhouse peaked at 8 inches in early March and had melted completely by the beginning of April (CDWR 2016 [RBP]).

In late May, SMUD initiated a maintenance project involving an exterior refurbishment of Robbs Peak Powerhouse that lasted approximately three months (Figure 4). Recreational activity on and around the reservoir during the early and mid-breeding season survey was low, but had increased by the late breeding season survey (see Attachment 3 for additional details). SMUD informed the resource agencies about the bald eagle nest in Sunset Campground and the USFS delayed opening a portion of the campground until July 29, 2016, which was several weeks after both chicks had fledged. In addition, the USFS installed signage near the entrances to the affected

campground loops and along the shoreline near the nest site informing visitors that the area was closed to public access. No observations of bald eagles exhibiting agitation or appearing disturbed as a result of recreational or maintenance activity at Union Valley Reservoir were made during the surveys.

6.2.2 Ice House Reservoir

Although there is suitable breeding habitat around Ice House Reservoir, no adult bald eagles were observed during the breeding season surveys. The two juveniles observed during the mid-breeding season survey are likely siblings and may be offspring from a previous nesting effort at Ice House Reservoir or other nearby habitat, such as Union Valley Reservoir. Weather and/or reservoir levels did not appear to be a factor for potential bald eagle nesting at Ice House Reservoir during the 2016 breeding season (see discussion in Section 6.2.1 on weather at Union Valley Reservoir as measured at Robbs Peak Powerhouse, which is the closest gage to Ice House Reservoir). During the breeding season, reservoir levels ranged from approximately 5,425 to 5,450 feet above mean sea level (CDWR 2016 [ICH]) and the main body of the reservoir did not freeze over for any significant length of time. SMUD did not initiate significant maintenance projects on Ice House Reservoir during the 2016 breeding season. Recreational activity on and around Ice House Reservoir was low during the early breeding season survey, but had increased notably by the late breeding season survey (Attachment 3). The two juveniles observed during the mid-breeding season survey did not exhibit signs of agitation or appear disturbed by recreational activity.

6.2.3 Loon Lake Reservoir

There is suitable bald eagle reproductive habitat around Loon Lake Reservoir during a limited season due to its high elevation (approximately 6,500 feet). The duration of this season varies with weather conditions from year to year. The potential bald eagle nest located on the south side of the reservoir approximately 400 feet from the Rubicon Trail was likely an unsuccessful nesting attempt that failed due to weather, predation, or other unknown factors. During the breeding season, reservoir levels ranged from approximately 6385 to 6410 feet above mean sea level (CDWR 2016 [LON]) and the main body of the reservoir was frozen over and covered with snow into April. Cumulative precipitation at Loon Lake Reservoir during the breeding season was approximately 38 inches, with much of it falling in the form of snow (CDWR 2016 [LON and VVL]). The most significant accumulation (approximately 30 inches) occurred before the end of March; however, several late-season storms brought an additional 8 inches of precipitation and below freezing average air temperatures in April and May (CDWR 2016 [VVL]). Snowpack (as measured by water content) at the nearby Van Vleck Gage peaked at approximately 40 inches in early March and did not melt completely until mid-May (CDWR 2016 [VVL]).

Maintenance activities conducted by SMUD during the breeding season included a roof repair effort at Loon Lake Powerhouse that began in early June and lasted approximately two months (Figure 8). Recreational activity on and around the reservoir

was low during the early breeding season survey and mid-breeding season survey and increased moderately by the late breeding season survey (Attachment 3). No observations of bald eagles exhibiting agitation or appearing disturbed as a result of recreational or maintenance activity at Loon Lake Reservoir were made during the surveys.

7.0 UPCOMING SURVEY PLANS

In accordance with the schedule outlined in Section 3.0 and described in the monitoring plan (SMUD 2015), two winter night roost surveys will be conducted at Union Valley Reservoir during the 2016/2017 winter season. Surveys during the 2017 breeding season will be conducted at Union Valley Reservoir and Loon Lake Reservoir. Since bald eagle nesting activity was not observed at Ice House Reservoir in 2016, this area will not be surveyed again until 2019.

8.0 LITERATURE CITED

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CDWR (California Department of Water Resources). 2016. Precipitation, snow water content, and reservoir level data from the following stations in California: Ice House Reservoir (Station ID: ICH), Loon Lake Reservoir (Station ID: LON), Union Valley Reservoir (Station ID: RBP), and Van Vleck Bunkhouse (Station ID: VVL). California Data Exchange Center, CDWR, Sacramento, California. <http://cdec.water.ca.gov/>

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Attachment 1
State Water Resources Control Board section 401 Water
Quality Certification for the UARP
Condition 8.L. Bald Eagle Monitoring

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

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, measurable 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 with at least 60 days to review and approve the plan prior to submittal to the Commission, if applicable. 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

Attachment 2
U.S. Department of Agriculture, Forest Service section 4(e)
Condition 31 for the UARP

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 4(e) 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 3
Bald Eagle Survey Forms

Attachment 4

Incidental Observations of Avian Species

Incidental Observations of Avian Species in the Study Area

Common Name	Scientific Name
Canada goose	<i>Branta canadensis</i>
bufflehead	<i>Bucephala albeola</i>
common merganser	<i>Mergus merganser</i>
mountain quail	<i>Oreortyx pictus</i>
common loon	<i>Gavia immer</i>
turkey vulture	<i>Cathartes aura</i>
sharp-shinned hawk	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
spotted sandpiper	<i>Actitis macularius</i>
white-headed woodpecker	<i>Picoides albolarvatus</i>
northern flicker	<i>Colaptes auratus</i>
pileated woodpecker	<i>Dryocopus pileatus</i>
olive-sided flycatcher	<i>Contopus cooperi</i>
western wood-pewee	<i>Contopus sordidulus</i>
dusky flycatcher	<i>Empidonax oberholseri</i>
Steller's jay	<i>Cyanocitta stelleri</i>
American crow	<i>Corvus brachyrhynchos</i>
common raven	<i>Corvus corax</i>
tree swallow	<i>Tachycineta bicolor</i>
mountain chickadee	<i>Poecile gambeli</i>
red-breasted nuthatch	<i>Sitta canadensis</i>
brown creeper	<i>Certhia americana</i>
golden-crowned kinglet	<i>Regulus satrapa</i>
mountain bluebird	<i>Sialia currucoides</i>
hermit thrush	<i>Catharus guttatus</i>
American robin	<i>Turdus migratorius</i>
yellow-rumped warbler	<i>Setophaga coronata</i>
hermit warbler	<i>Setophaga occidentalis</i>
spotted towhee	<i>Pipilo maculatus</i>
fox sparrow	<i>Passerella iliaca</i>
dark-eyed junco	<i>Junco hyemalis</i>
evening grosbeak	<i>Coccothraustes vespertinus</i>
eared grebe	<i>Podiceps nigricollis</i>
osprey	<i>Pandion haliaetus</i>