

Study 4.2  
**SPECIAL-STATUS WILDLIFE –  
RAPTORS**  
January 2017

## **1.0 Project Nexus**

South Sutter Water District’s (SSWD) continued operation and maintenance (O&M) of the Camp Far West Hydroelectric Project (Project) has the potential to affect special-status raptors.<sup>1</sup>

For the purpose of this Special-Status Wildlife – Raptors Study (Study), a special-status wildlife raptor species is a species that has a reasonable possibility of being affected by Project O&M or associated recreation and meets one or more of the following criteria: 1) protected under the Bald and Golden Eagle Protection Act (BGEPA); 2) protected under the Migratory Bird Treaty Act; 3) designated by United States Fish and Wildlife Service (USFWS) as a Bird of Conservation Concern (BCC); 4) listed by the Sacramento, CA, USFWS as Sensitive (USFWS-S); 5) designated by the California Department of Fish and Wildlife (Cal Fish and Wildlife) as a Species of Special Concern (SSC); 6) listed as threatened (ST) or endangered (SE), or a candidate or proposed for listing under the California Endangered Species Act (CESA); or 7) Fully Protected under California law (FP).

## **2.0 Study Goals and Objectives**

The goal of this study is to supplement existing information regarding special-status raptors.

The objective of this study is to gather information, including: 1) identify and map the location of nesting sites; 2) document the presence of special-status raptors necessary to make this determination when surveys are performed; 3) identify important roosting or hunting perches; and 4) compile incidental observations of other raptors observed while conducting the study.

The Study does not include the development of potential requirements in the new license.

## **3.0 Existing Information and Need for Additional Information**

Existing and relevant information regarding known and potentially occurring special-status raptors in the Project Vicinity<sup>2</sup> is provided in Sections 3.2.4.3 and 3.2.4.4 of SSWD’s Pre-Application Document (PAD). SSWD identified three special-status raptors that are known or

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<sup>1</sup> A “raptor” is defined as a bird of prey, and are normally divided into two main groups, the diurnal (day-flying) raptors and the nocturnal (night-flying) raptors; the latter better known as owls. This Study focuses on day-flying raptors.

<sup>2</sup> For the purposes of the relicensing, the “Project Vicinity” is defined as the area surrounding the Project in the order of a county or USDOI, United States Geological Survey (USGS) 1:24,000 topographic quadrangle.

have the potential to occur within the existing Federal Energy Regulatory Commission (FERC) Project Boundary. Table 3.0-1 provides for each of these species: 1) special status; 2) suitable habitat type; and 3) recorded occurrence in the Project Vicinity.

**Table 3.0-1. Special-status raptor species known to occur or likely to occur in the Project Vicinity.**

Bat Species	Special Status <sup>1</sup>	Suitable Habitat Type	Occurrence in Project Vicinity
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	SE, FP & BCC	Breeding habitat usually includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources. Preferentially roosts in conifers or other sheltered sites in winter in some areas.	The species is known to occur within the Project Vicinity (Sycamore Associates 2013).  Bald eagles and a nest were observed during BA surveys on 'riverine' arm of reservoir (Sycamore Associates 2013).  A bald eagle was observed at the SSRA on September 15, 2015 during SSWD's bat surveys.
Golden eagle ( <i>Aquila chrysaetos</i> )	FP & BCC	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions.	The species was identified as having the potential to occur within the Project Vicinity.
Long-eared owl ( <i>Asio otus</i> )	SSC	Riparian bottomland forest with over story of willows ( <i>Salix</i> sp.) and cottonwoods ( <i>Populus</i> sp.); riparian forest along stream corridors (often dominated by live oak trees). Wooded areas with dense vegetation needed for roosting and nesting, adjacent open areas needed for hunting.	The species was identified as having the potential to occur within the Project Vicinity.
Northern harrier ( <i>Circus cyaneus</i> )	SSC	Marshes, meadows, grasslands, and cultivated fields.	The species was identified as having the potential to occur within the Project Vicinity.
Short-eared owl ( <i>Asio flammeus</i> )	SSC	Broad expanses of open land with low vegetation for nesting and foraging are required.	The species was identified as having the potential to occur within the Project Vicinity.
Swainson's hawk ( <i>Buteo swainsoni</i> )	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs and agricultural or ranch.	This species was found adjacent to the Project Vicinity within the Nicolaus, Sheridan, Wheatland and Verona quads.
White-tailed kite ( <i>Elanus leucurus</i> )	FP	Savanna, open woodland, marshes, partially cleared lands and cultivated fields, mostly in lowland situations.	The species was identified as having the potential to occur within the Project Vicinity.

Source: CDFW 2015

<sup>1</sup> Status:

- BCC= Bird of Conservation Concern
- ST= State Threatened
- FP= Fully Protected
- SE= State Endangered
- SSC= Species of Special Concern

Additional information, which will be provided by this Study, is needed to address the Study goal. The Study will identify the specific location of special-status raptors in relation to Project facilities, and normal Project O&M activities that might affect these special-status raptor species.

## **4.0 Study Methods and Analysis**

### **4.1 Study Area**

The Study Area encompasses the FERC Project Boundary encompassing the Camp Far West Reservoir. The Study Area is shown in Figure 4.1-1.

If SSWD proposes an addition to the Project, the Study Area will be expanded if necessary to include areas potentially affected by the addition.

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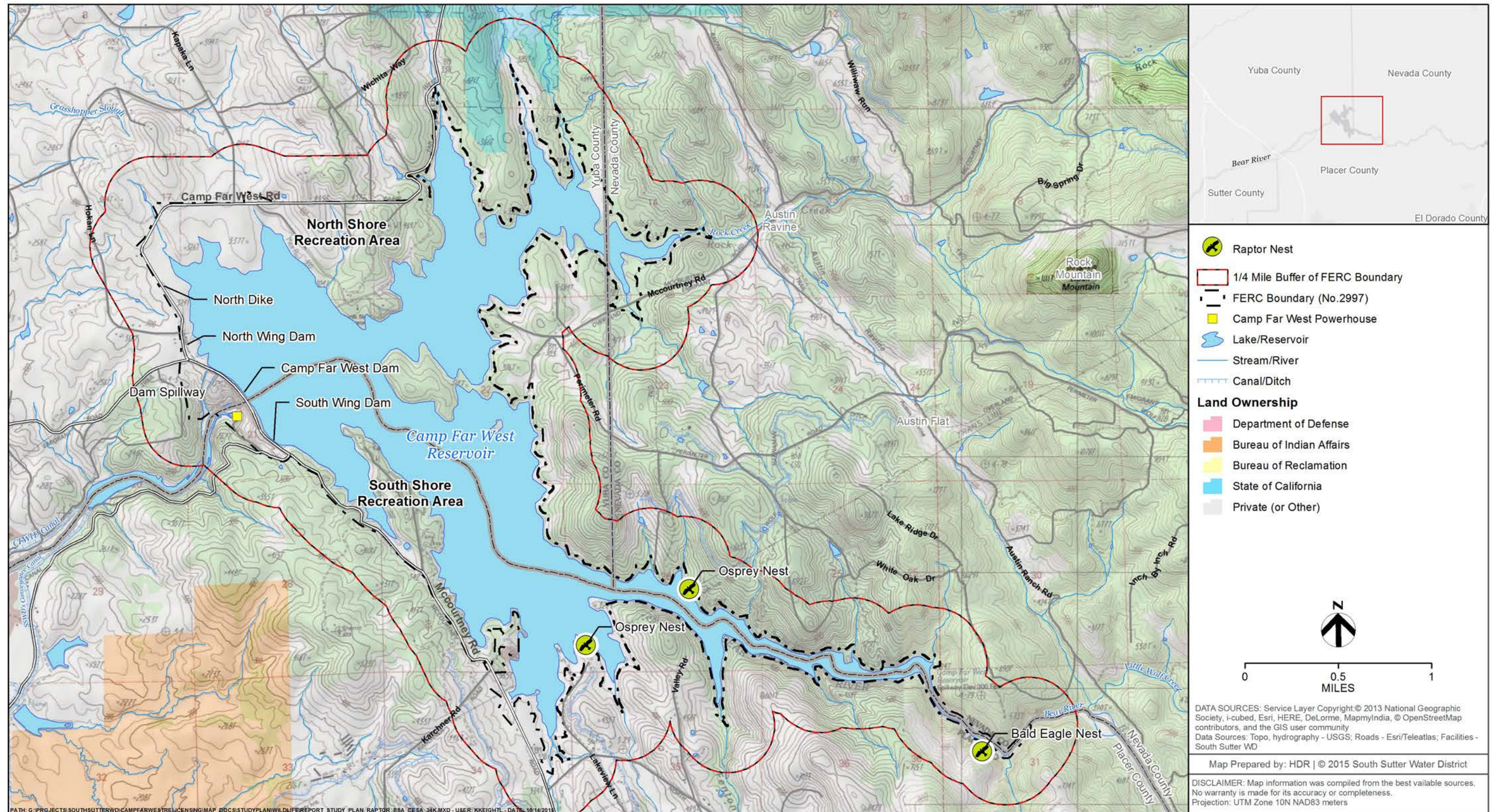


Figure 4.1-1. Study Area for Special-status Wildlife Raptors.

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## 4.2 General Concepts and Procedures

The following general concepts and practices apply to all SSWD relicensing studies:

- Personal safety is the most important consideration of each fieldwork team.
- If required for the performance of the study, SSWD will make a good faith effort to obtain permission to access private property well in advance of initiating the study. SSWD will only enter private property if such permission has been provided by the landowner.
- SSWD will acquire all necessary permits prior to beginning fieldwork for a study that requires them.
- Field crews may make variances to the study plan in the field to accommodate actual field conditions and unforeseen problems. When a variance is made, the field crew will follow to the extent applicable the protocols in the study plan.
- SSWD's performance of the study does not presume that SSWD is responsible in whole or in part for measures that may arise from the study.
- If Global Positioning System (GPS) data are required by a study plan, they will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3-meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and SSWD's consultant's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon request, GIS maps will be provided to National Oceanic and Atmospheric Administration, National Marine Fisheries Service; USFWS, Cal Fish and Wildlife or SWRCB in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata. Metadata will be Federal Geographic Data Committee compliant.
- SSWD's field crews conducting relicensing studies will record incidental records of aquatic and wildlife species observed during the performance of a study. All incidental observations will be reported in the Application for New License. The purpose of this effort is not to conduct a focused study (i.e., no effort in addition to the specific field tasks identified for the specific study) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of a relicensing study. Species included for incidental observation during this study will include, but are not limited to: osprey (*Pandion haliaetus*), any bats or positive sign of bats; Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*O. mykiss*), including redds and carcasses; northern western pond turtle (*Actinemys marmorata*); foothill yellow-legged frog (*Rana boylei*); American bullfrog (*Lithobates catesbeianus*); blue elderberry (*Sambucus nigra ssp. caerulea*); and aquatic invasive species.

- Field crews will be trained on, provided with, and use materials (e.g., Quat disinfectant) for decontaminating their boots, waders, and other equipment between water-based study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g., zebra mussel, *Dreissena polymorpha*).
- If in the performance of a study, SSWD observes an ESA-listed or special-status species, within 30 days of the observation SSWD will submit to Cal Fish and Wildlife's California Natural Diversity Database a record, on the appropriate form, of the observation.
- If a study plan requires collection and reporting of time series data, the data will be provided at a minimum in HEC-DSS format. A viewer for these files (HEC-DSSVue) can be obtained from the United States Army Corps of Engineers at the following website as of March 2008: <http://www.hec.usace.army.mil/software/hec-dss/hecdssvue-dssvue.htm> in both Microsoft® Excel and \*.DSS formats.
- If a field crew encounters human remains during field work, all work within a 100-foot radius of the discovery will stop immediately. The field crew will not disturb the remains in any way. The field crew will secure the area to the best of its ability, mark the location with flagging tape in such a way as to not draw attention to the remains, and record the location using a GPS unit or plot the location by hand on a map if no GPS unit is available. As soon as possible thereafter, the field crew will contact SSWD and the relicensing Cultural Resources Lead to report the discovery. SSWD will report the finding and initiate the appropriate steps required under State of California and federal law to address the discovery. Any human remains encountered will be treated with respect, and the field crew members will keep the location confidential and will not disclose the location of the discovery to the public or to any other study crews. The field crew will keep a log of all calls/contacts it makes regarding the discovery and that details the event. Work will not proceed in the secured area of the discovery until provided clearance by SSWD.

## 4.3 Study Methods

The Study consists of the following three steps: 1) identify and map known raptor nest sites and other occurrences within the Study Area; 2) conduct surveys following specific protocols for bald eagle, golden eagle and Swainson's hawk; and 3) perform quality assurance/quality control (QA/QC) review. Each step is described below.

### 4.3.1 Step 1 – Identify and Map Known Nest Sites

SSWD will identify and map known occurrences of bald eagle, golden eagle and Swainson's hawk sightings, nests and roosts in the Study Area. The map will be based on existing CWHR data, CNDDDB data, discussions with wildlife biologists, discussions with Project Operations Staff, and incidental sightings by field staff during fieldwork on Camp Far West Reservoir.



## 4.3.2 Step 2 – Raptor Surveys

### 4.3.2.1 Bald Eagle

#### 4.3.2.1.1 Winter Surveys

SSWD will conduct wintering bald eagle surveys and winter night roost surveys according to the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004). Survey methods include:

- Wintering Bird Surveys. One or 2-day surveys will be conducted monthly along Camp Far West Reservoir from December through February (i.e., three surveys, at least 2 weeks apart) to capture peak wintering activity. The January survey will be conducted during the 2-week nationwide, mid-winter bald eagle survey c, unless inclement weather prohibits safe surveys. The surveys will either be conducted from a helicopter or boat depending on weather conditions and accessibility with the intent of surveying to 0.25-mile inland from the edge of the shoreline of Camp Far West Reservoir.
- Winter Night Roost Surveys. Winter night roost surveys will be conducted once monthly from December through February. Surveys will be conducted in the afternoon/early evening in areas where bald eagles were observed wintering in an effort to identify any night roosts. If roosts are located, the number of bald eagles will be recorded as they move from foraging to roosting habitat. These locations will be revisited the following morning, approximately 30 minutes before sunrise for at least 2 hours to count the number of bald 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 (e.g., feathers or castings) and the exact location will be recorded by GPS. The survey forms derived by Jackman and Jenkins (2004) will be used for both the wintering and night bald eagle roost surveys.

#### 4.3.2.1.2 Nest Surveys

SSWD will conduct nesting bald eagle surveys according to the *Bald Eagle Breeding Survey Instructions* (CDFG 1999) and *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Jackman and Jenkins 2004). Nesting territories will be checked at least three times during the nesting season (primarily February through July). Survey methods include:

- Determine Occupancy of Territories and Early Incubation. Territories will be checked in early March, as weather conditions allow, in areas that have historical data available. Data collected at each site will consist of: 1) presence of bald eagle adults; 2) courtship behavior; 3) evidence of nest repair or construction; 4) incubation; 5) observation of old nests; and 5) identification of any new nests. Surveys will be performed from a boat, GPS coordinates will be recorded, and photographs taken for all nests observed. The intent is to survey 0.25-mile inland from the edge of the shoreline of Camp Far West Reservoir.

- Confirm Occupancy of Territories and Presence of Eggs/Nestlings. Surveys will be conducted in late April or early May to determine whether the bald eagle breeding pair surveyed in March is still tending the nest (e.g., incubating eggs or tending nestlings). The number of eggs/nestlings, bird behavior, and any other relevant observations will be recorded. These surveys will be conducted in the same manner as the initial surveys.
- Determine Nest Success. Surveys will be conducted in mid-June to determine how many bald eagle nestlings are approaching fledgling age. These surveys will be conducted in the same manner as the other nesting surveys. The Cal Fish and Wildlife California Bald Eagle Nesting Territory Survey Form will be utilized during all nesting surveys.

#### 4.3.2.2 Golden Eagle

SSWD will conduct nesting golden eagle surveys according to the *Interim Golden Eagle Inventory and Monitoring; and Other Recommendations* (USFWS 2010) and *Protocol For Golden Eagle Occupancy, Reproduction, and Prey Population Assessment* (Driscoll 2010). Nesting territories will be checked four times during the nesting season (i.e., primarily February through July), with each survey spaced at least 30 days apart. Survey methods include:

- **Occupancy Survey:** Between January 1 and February 28, conduct one 4-hour survey to document courting behavior and nest building. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) GPS location of all golden eagles observed, and 6) weather.
- **Incubation Survey:** During March, conduct one 4-hour survey to document nests and egg incubation. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of eggs observed, 6) GPS location of all golden eagles observed, and 7) weather.
- **Nestling Survey:** Between April 1 and May 15, conduct one 4-hour survey to document nestlings. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of nestlings observed, description of plumage, and behavior, 6) GPS location of all golden eagles observed, and 7) weather.
- **Fledgling Survey:** Between May 15 and June 30, conduct one 4-hour survey to document fledglings. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of fledglings observed, description of plumage, and behavior, 6) GPS location of all golden eagles observed, and 7) weather.

#### 4.3.2.3 Swainson's Hawk

SSWD will conduct nesting Swainson's hawk surveys according to the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000). Survey periods are described below.

- Survey Period I. Survey period I will fall between January-March 20. Survey period I serves as an opportunity to scout potential nest locations prior to species arrival from wintering habitats. Additionally, the surveyor has the opportunity to locate and map competing species nest sites.
- Survey Period II. Survey period II will occur March 20- April 5 and focus on arrival and nest building. This period requires three full surveys. Most trees are leafless and are relatively transparent; it is easy to observe old nests, staging birds, and competing species. Both males and females are actively building and visiting their selected nest site frequently. Later in this survey period, territorial and courtship displays are increased, as is copulation. The birds tend to vocalize often, and nest locations are most easily identified. This period may require a great deal of "sit and watch" surveying.
- Survey Period III. Survey period III will fall April 5 – April 20 with a purpose to observe nest building and egg laying. Survey time will occur during daylight hours and as needed to monitor known nest sites only. This period requires three full surveys. During this phase of nesting, the female Swainson's hawk is in brood position, very low in the nest, laying eggs, incubating, or protecting the newly hatched and vulnerable chicks; her head may or may not be visible. Following the male to the nest may be the only method to locate it.
- Survey Period IV. Survey period IV will occur April 21-June 10 to observe known nest sites and incubation. Survey time will occur from sunrise to 1200 and 1630 to sunset. This period requires three full surveys. Adult females are known to be in brood position during this time. Nests are typically built in heavily vegetative sections of trees.
- Survey Period V. Survey period V will occur June 10 – July 30 to observe post-fledgling activity. Survey time will occur from sunrise to 1200 and 1600 to sunset. This period requires three full surveys. Adults are known to be active near nest site. Young are active and visible, and relatively safe without parental protection. Both adults make numerous trips to the nest and are often soaring above, or perched near or on the nest tree.

#### 4.3.2.4 Incidental Raptor Sightings

During the Study, SSWD will record any raptor sightings and nests observed looking inland within 0.25 mile from the edge of the shoreline at Camp Far West Reservoir, photograph the nest, and record the location using GPS; this includes, but is not limited to, northern harrier, short-eared owl, long-eared owl, and white-tailed kite. If reasonably possible, SSWD will make a determination as to whether the raptor nest is active or inactive during the survey year.

### **4.3.3 Step 3 – Quality Assurance/Quality Control Data**

SSWD will perform a QA/QC review of all data, including maps and sightings.

## **5.0 Schedule**

SSWD anticipates the schedule to complete special-status raptor studies as follows:

Planning .....	November 2016
Field Work: Wintering Surveys .....	December 2016 – Feb 2017
Field Work: Nesting Surveys.....	March 2017 – July 2017
QA/QC .....	July 2017

The Study information will be included in SSWD’s DLA and FLA. If SSWD completes the Study before preparation of the DLA, SSWD will post the information on SSWD’s Relicensing Website and issue an e-mail to Relicensing Participants advising them that the report is available.

## **6.0 Consistency of Methodology with Generally Accepted Scientific Practices**

For bald eagle, this Study is consistent with the goals, objectives, and methods outlined for most recent FERC hydroelectric relicensing efforts in California, including for the Yuba River Hydroelectric Project (FERC No. 2246) and Merced River Hydroelectric Project (FERC No. 2179) relicensings. The study uses well established procedures from Cal Fish and Wildlife, USFWS and other reputable sources.

## **7.0 Level of Effort and Cost**

SSWD estimates the cost to complete this study in 2016 dollars is between \$50,000 and \$70,000.

## **8.0 References Cited**

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