

Revised Study Plan
Boundary Hydroelectric Project (FERC No. 2144)

Study No. 18
Rare, Threatened, and Endangered (RTE) Wildlife Species Study

Seattle City Light

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Study No. 18 – Rare, Threatened, and Endangered Wildlife Species Study

1.0 INTRODUCTION

In general, rare, threatened, and endangered (RTE) wildlife species and habitat use in the Project vicinity¹ are not well understood. There is some useful information on bald eagle nesting activity, but the available data need to be supplemented with observations of foraging/perching/roosting activity throughout the year. There are also many other RTE wildlife species that potentially occur in the Project vicinity, for which there are very little data, if any. The RTE Wildlife Species Study will provide information on RTE wildlife species for the relicensing analysis of Project effects.

For the purpose of this study, RTE wildlife species are defined as follows;

- *Federally Listed or Proposed Species* — Species that are listed and protected under the Endangered Species Act (ESA) of 1973, as Endangered or Threatened, or proposed for listing.
- *Federal Candidates* — Species for which the U.S. Fish and Wildlife Service (USFWS) believes it has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA. However, the USFWS encourages the formation of partnerships to conserve these species.
- *State Listed Species* — Species that are protected by the State of Washington (WAC 232-12-297):
 - State Endangered Species include “species native to the state of Washington that are seriously threatened with extinction throughout all or a significant portion of their range within the state.”
 - State Threatened Species include any “species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.”
 - State Sensitive Species are defined as species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats” (WDFW 2006a).

¹ The study area for the botanical and wildlife resource studies varies by study, referring to both the “Project area” and “Project vicinity.” The area within the FERC-licensing Project boundary (which includes all Project structures, the reservoir, and the transmission line right-of-way from the powerhouse to the BPA interconnection) is considered the “Project area.” For the purposes of the botanical and wildlife resource studies, the “Project vicinity” encompasses the Project area as well as any adjacent lands that are included in the study.

- *State Candidate Species* — Species that the WDFW will review for possible listing as State Endangered, Threatened, or Sensitive. A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive (WDFW 2006a).
- *State Monitor Species* — Species not state listed, but monitored for status and distribution. State Monitor Species are managed by the WDFW, as needed, to prevent them from becoming endangered, threatened, or sensitive (WDFW 2006a).
- *USFS Sensitive Species* — Species on the July 2004 Regional Forester’s List of Sensitive Species for the Colville National Forest (CNF). The Regional Forester’ List also includes species already protected under the ESA and candidates for listing.
- *USFS Colville National Forest Management Indicator Species (MIS)* — Species on the CNF selected for management. These species “were chosen to provide habitat needs of all vertebrate species, to monitor selected habitats that could become limiting to some species through forest management activities, and to provide sufficient populations of selected species to meet demands for wildlife-related recreation” (USFS 1988).
- *BLM Sensitive Species* — Species on the March 2005 Washington BLM Special Status Species List. The BLM list also includes species already protected under the ESA or state listed as endangered or threatened and candidates for listing.
- *WDFW Priority Species* — Priority species are those species requiring protective measures and/or management guidelines to ensure their perpetuation. These include those that have state status or are commercially or culturally important (WDFW 2006b).

It should be noted that the assessment of RTE wildlife species does not include bats with RTE status; evaluation of potential Project effects on bats and their habitats will be accomplished through a separate study (Bat Surveys and Habitat Inventory; see Attachment 2, Study No. 20 of this RSP). Similarly, deer (*Odocoileus hemionus* and *O. virginianus*), and elk (*Cervus elaphus*), which are designated MIS on the CNF and WDFW Priority Species, are addressed in the Big Game Study (see Study No. 19).

2.0 STUDY PLAN ELEMENTS

2.1. Nexus between Project Operations and Effects on Resources

Water level fluctuations in Boundary Reservoir and other activities related to operation and maintenance of the Project may have direct and/or indirect effects on RTE wildlife or the habitat on which they depend. Direct impacts potentially result from Boundary Project (Project) activities that remove or alter RTE wildlife habitat, such as maintenance of facilities and transmission line rights-of-way or construction. The spread of invasive plant species from areas disturbed by Project-related activities to native habitats has the potential to indirectly impact RTE wildlife species through habitat degradation. Habitat loss can also be caused by reservoir shoreline erosion from water level fluctuations due to Project operations (direct Project-related

impact) and wave action from watercraft (indirect impact associated with recreation) and wind, as well as other factors. Increased human activity and noise resulting from Project operation and maintenance activities can also directly disturb RTE wildlife using habitats near the reservoir and Project facilities. Other potential indirect impacts to RTE wildlife may include disturbance from recreational activities at developed and undeveloped campgrounds, roads, and trails in the Project vicinity.

2.2. Agency Resource Management Goals

In addition to providing information needed to characterize Project effects, the RTE Wildlife Species Study will provide information to help agencies with jurisdiction over these species in the Project vicinity identify appropriate conditions for the new Project license pursuant to their respective mandates. The following agencies are those with management responsibility in the context of FERC relicensing of the Boundary Project and management goals related to RTE wildlife:

USDA Forest Service (USFS)

Department of Agriculture Regulation 9500-4 directs the USFS to manage “habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species.” USFS policy implementing the National Forest Management Act, National Environmental Policy Act, and the ESA establishes objectives and direction to ensure that actions on National Forest System (NFS) lands do not contribute to trends toward Federal listing or loss of viability of any native or desired non-native species (Forest Service Manual [FSM] 2672.41 [USFS 1995]). The objectives of the sensitive species program include the development and implementation of management practices to ensure that species do not become threatened or endangered and to maintain viable populations of all native and desired nonnative wildlife, fish and plant species in habitats distributed throughout their geographic range on NFS lands (FSM 2670.22). This requires the agency to monitor other “watch-lists or species of concern” that may be declining, but have reached critical population levels. USFS policy includes the requirement to, as part of the NEPA process, review programs and activities, through a Biological Evaluation, to determine their potential effect on Sensitive Species, and to avoid or minimize impacts to species whose viability has been identified as a concern (FSM 2670.32). The list of sensitive species for USFS Region 6, which includes the CNF, was last updated in March, 2004.

U.S. Fish and Wildlife Service (USFWS)

The USFWS is responsible for the recovery of species listed as threatened or endangered under the ESA.

U.S. Bureau of Land Management (BLM)

The National Forest Management Act also applies to the BLM. BLM’s policy for conserving RTE species is directed by BLM Manual 6840 and Instruction Memorandum OR-91-57 (November 5, 1997). Manual 6840 requires that the BLM work with state agencies in achieving conservation goals for locally rare species as designated by state governments. BLM State Directors are responsible for designating sensitive species for management with the purpose of

“assisting in maintaining viable gene pools while allowing flexibility under a multiple use mission” (BLM 1990).

The list of BLM Sensitive Species for Oregon and Washington was updated in July 2005 and includes species designated as Sensitive, Assessment, and Tracking. (Washington and Oregon BLM Website). Impacts to BS and BA species on BLM lands are to be addressed as part of the National Environmental Policy Act (NEPA) process. Additionally, Manual 6840 directs the BLM to conduct inventories and monitoring to conserve designated BS species. Special management or protection is discretionary for BT species (BLM 1990).

Washington Department of Fish and Wildlife (WDFW)

The State of Washington does not have an endangered species act. Species are listed by the Washington Fish and Wildlife Commission as endangered, threatened, or sensitive using listing procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297). These procedures include how species listing will be initiated, criteria for listing and de-listing, public review and recovery and management of listed species. Listed species cannot be hunted and the WDFW is required to write a recovery plan for threatened or endangered species.

In addition, the WDFW maintains a list of Priority species (WDFW 2006b). Priority species include those that are state listed or are candidates for listing, as well as other native species believed to require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and /or recreational, commercial, or tribal importance. The WDFW has prepared management guidelines for most Priority species to assist landowners, users, and managers in conducting land-use activities in a manner that incorporates the needs of wildlife.

2.3. Study Goals and Objectives

The goal of the RTE Wildlife Species Survey is to provide information needed to determine the presence of RTE species and/or their habitats in the Project vicinity, identify limiting factors in landscape movement across the Project vicinity, and assess Project effects on RTE species and their habitats. Specific objectives of this study are as follows:

- Document historical and recent RTE wildlife species observations in the Project vicinity.
- Identify and map new occurrences of select RTE wildlife species in the Project vicinity.
- Document locations and condition of potential habitat for RTE species and identify any factors that may limit landscape movement of these species across the Project vicinity.
- Identify potential threats to RTE wildlife species or their habitats, including potential Project effects.

2.4. Need for Study

Summary of Existing Information

A target list of RTE wildlife species with the potential to occur in the Project vicinity was compiled in 2005 for the preparation of the Boundary Project relicensing Pre-Application Document (PAD; SCL 2006a) and was expanded for this study plan to include designated USFS MIS and several other RTE species (Table 2.4-1). Of the 41 RTE wildlife species that could occur, 13 have been documented in the Project vicinity in the past by the USFS or WDFW or during reconnaissance-level surveys conducted by Seattle City Light (SCL) in 2005 and 2006.

The bald eagle (*Haliaeetus leucocephalus*) is the one federally listed species that is known to occur in the Project vicinity on a routine basis. Four nesting territories have been documented by SCL and/or the WDFW near Boundary Reservoir: (1) Sand Creek on the SCL-owned Boundary Wildlife Preserve (BWP) (found in 1989), (2) Box Canyon (found in 2000), (3) Everett Island (found in 1999; also known as the Z-Canyon site); and (4) Metaline. SCL has supported limited data collection at the Sand Creek bald eagle nest site over the last two decades and productivity data for the other two nesting territories have been collected periodically (Table 2.4-2). Winter use of the Project vicinity by bald eagles is thought to be low, although no standardized surveys have been conducted along the river since the 1980s, when mid-winter counts rarely found bald eagles (USFS unpublished data, CNF Sullivan Lake Ranger District). No information is available on the diets of nesting or wintering bald eagles in the Project vicinity. However, because bald eagles typically forage for fish in water less than 4 feet deep (McEneaney 2002), it is expected that the reservoir upstream of Metaline Falls includes more suitable foraging habitat for this species than the downstream portion of the reservoir. The upstream portion of the reservoir also provides more habitat for waterfowl, which are also prey for bald eagles.

Table 2.4-1. RTE wildlife species potentially occurring in the Boundary Project vicinity.

Scientific Name/ Common Name ¹	USFWS Status ²	USFS Status ^{2,3}	BLM Status ^{2,4}	WDFW Status ⁵	Suitable Habitat	Occurrence
Amphibians (3)						
<i>Bufo boreas</i> Western Toad	None	None	BT	SC PS	Breeds at lake margins, ponds, and wetlands	Documented in several lakes and wetlands in the general vicinity of the Project
<i>Rana luteiventris</i> Columbia Spotted Frog	None	None	BT	SC PS	Breeds in cool, temporary water	Documented in a wetland just downstream of the Project in June 2006; observed in several other lakes and wetlands in the Project vicinity
<i>Rana pipiens</i> Northern Leopard Frog	None	S	None	SE PS	Permanent to semi-permanent lentic habitats for breeding; overwinter in water	Has not been documented in Pend Oreille County for many years
Birds (27)						
<i>Accipiter gentilis</i> Northern Goshawk	None	None	BA	SC PS	Mature conifer forest	Individuals have been detected by the USFS in the Sullivan Lake Ranger District but no nesting has been documented
<i>Aechmophorus occidentalis</i> Western Grebe	None	None	None	SC PS	Lakes and wetlands	Observed in fall 2005 on Boundary Reservoir; uncommon migrant at Box Canyon Reservoir (BCR)
<i>Aegolius funereus</i> Boreal Owl	None	None	BT	SM	Subalpine forests	Reported to occur in Pend Oreille County
<i>Aquila chrysaetos</i> Golden Eagle	None	None	BT	SC PS	Typically nests on cliffs or large trees in open or semi-open habitats	Rare migrant at BCR; observed in June 2005 near Boundary Dam
<i>Ardea herodias</i> Great Blue Heron	None	MIS	BT	SM PS	Nests in trees; forages in wetlands and rivers	Observed along Boundary Reservoir; abundant resident at BCR
<i>Cathartes aura</i> Turkey Vulture	None	None	BT	SM	Nests in caves and crevices in cliffs; forage in open habitats	Uncommon breeder at BCR; observed near Mt. Linton, Sullivan Creek mouth, and near Box Canyon Dam
<i>Chaetura vauxi</i> Vaux's Swift	None	None	BT	SC PS	Roosts and nests in tree cavities	Not detected at BCR

Table 2.4-1, continued...

Scientific Name/ Common Name ¹	USFWS Status ²	USFS Status ^{2,3}	BLM Status ^{2,4}	WDFW Status ⁵	Suitable Habitat	Occurrence
<i>Cypseloides niger</i> Black Swift	None	None	None	SM	Nests in colonies on protected cliffs beneath waterfalls	Not detected at BCR
<i>Dendragapus obscurus</i> Blue Grouse	None	MIS	None	Game PS	Nests in open forests with grass/shrub understory at lower elevations.	Not detected at BCR
<i>Dryocopus pileatus</i> Pileated Woodpecker	None	MIS	BT	SC PS	Forests with large trees and snags	Observed in the Project vicinity; uncommon resident at BCR
<i>Falco columbarius</i> Merlin	None	None	BT	SC PS	Conifer stands near openings	Rare migrant at BCR
<i>Falco peregrinus anatum</i> American Peregrine Falcon	None	S	BS	SS PS	Cliffs for nesting	Observed in Metaline Falls area; suitable cliffs occur
<i>Gavia immer</i> Common Loon	None	S	BT	SS PS	Secluded lakes, emergent wetlands	Has been sighted on Boundary Reservoir; common at Mill Pond and other lakes in the area (non-breeding)
<i>Grus canadensis</i> Sandhill Crane	None	S	SE	SE PS	Emergent wetlands, meadows	Unknown
<i>Haliaeetus leucocephalus</i> Bald Eagle	FT	FT	FT	ST PS	Forest stands with large trees near water	Nests within and near Project area – at least 4 known territories in 2006
<i>Lanius ludovicianus</i> Loggerhead Shrike	None	None	BT	SC PHS	Open, savannah-like habitats	Not detected at BCR
<i>Melanerpes lewis</i> Lewis' Woodpecker	None	None	BT	SC PS	Nests in large, dead cottonwood trees	Not detected at BCR
<i>Otus flammeolus</i> Flammulated Owl	None	None	BT	SC PS	Open mature conifer forests	Not detected at BCR
<i>Pandion haliaetus</i> Osprey	None	None	BT	SM	Nests in large trees or on platforms near water	Nests in and near the Project area – 4 nests documented in 2005
<i>Pelecanus erythrorhynchos</i> American White Pelican	None	None	SE	SE PS	Large lakes and emergent wetlands	Not detected at BCR
<i>Picoides albolarvatus</i> White-headed Woodpecker	None	None	BA	SC PS	Ponderosa pine or mixed conifer forests	Not detected at BCR
<i>Picoides arcticus</i> Black-backed Woodpecker	None	None	BT	SC PS	Post-fire forests with standing dead trees	Not detected at BCR

Table 2.4-1, continued...

Scientific Name/ Common Name ¹	USFWS Status ²	USFS Status ^{2,3}	BLM Status ^{2,4}	WDFW Status ⁵	Suitable Habitat	Occurrence
<i>Picoides tridactylus</i> Three-toed Woodpecker	None	MIS	BT	SM	Nests in mature lodgepole pine or sub-alpine fir; forages on dead standing trees	Priority Habitat Species database record within 0.5 mile of Project vicinity
<i>Podiceps nigricollis</i> Eared Grebe	None	S	BT	PS	Lakes, wetlands	Uncommon migrant at BCR
<i>Sialia mexicana</i> Western Bluebird	None	None	BT	SM	Fields and open woods	Not detected at BCR
<i>Strix nebulosa</i> Great Gray Owl	None	S	BT	SM	Mature mixed conifer forest	Not detected at BCR
<i>Strix varia</i> Barred Owl	None	MIS	None	None	Lower elevation mature and old growth forest	Not detected at BCR
Mammals (11)						
<i>Canis lupus</i> Gray Wolf	FE	FE	FE	SE PS	Various habitats secluded from human activity	Periodic unconfirmed sightings in vicinity
<i>Castor canadensis</i> Beaver	None	MIS	None	Game	Aquatic and riparian habitats with aspen & willow	Documented in Boundary Reservoir upstream of Metaline Falls
<i>Corynorhinus townsendii</i> Townsend's Big-eared bat	None	S	BA	SC PS	Maternity colonies and roosts found in caves, mines and buildings in a variety of habitats	Documented at several caves on Sullivan Lake Ranger District
<i>Gulo gulo</i> California Wolverine	None	S	BA	SC PS	Conifer forests at higher elevations	Unknown
<i>Lynx canadensis</i> Lynx	FT	FT	FT	ST PS	Various habitats secluded from human activity; more typically at higher elevations	Documented outside Project vicinity
<i>Martes americana</i> Marten	None	MIS	None	Game PS	Mature & old growth mesic conifer forest, down trees at moderate to high elevation	Not detected at BCR
<i>Martes pennanti</i> Pacific Fisher	None	None	FC	SE PS	Closed canopy forests with abundant logs and snags and riparian & wetland habitats	PHS record near Slate Creek 1.5 mile east of reservoir

Table 2.4-1, continued...

Scientific Name/ Common Name ¹	USFWS Status ²	USFS Status ^{2,3}	BLM Status ^{2,4}	WDFW Status ⁵	Suitable Habitat	Occurrence
<i>Myotis evotis</i> Long-eared Myotis	None	None	BT	SM PS	Hibernates in caves; summer day roosts under bark of trees in coniferous forests	Unknown
<i>Myotis volans</i> Long-legged Myotis	None	None	BT	SM PS	Mid-elevation forests; hibernates in winter in mines or caves	Unknown
<i>Rangifer tarandus caribou</i> Woodland Caribou	FE	FE, MIS	FE	SE PS	High elevation forests	Documented outside Project vicinity
<i>Ursus arctos</i> Grizzly Bear	FT	FT, MIS	FT	SE PS	Various habitats secluded from human activity	Occasional observations in area, including the Project vicinity

Source: Modified from the PAD (SCL 2006a) based on new information from the USFS, USFWS, BLM, and SCL.

- 1 Species in bold have been documented in the Project vicinity by SCL, USFS, or WDFW.
- 2 U.S. Fish and Wildlife Service (USFWS) Classification (WDFW 2006a).
FE=Listed as Endangered, FT=Listed as Threatened,
FC=Candidate for federal listing (not protected under ESA)
- 3 USDA Forest Service (USFS) Regional Forester's Sensitive Species, Region 6, updated July 2004 (USFS 2004). S = Sensitive CNF list of Management Indicator Species (1988). This list also includes the northern bog lemming and Franklin's grouse, which are unlikely to occur in the Project vicinity and were therefore not included. Deer and elk, which are also MIS, are covered in the Big Game Study (see Attachment 2, Study No. 19 of this RSP). MIS=Management Indicator Species.
- 4 Bureau of Land Management Special Status Species, updated March 2005 (BLM 2005). BLM Special Status Species Categories:
BS = Bureau Sensitive – Nominated by BLM District Managers; must be listed by WDFW to be eligible.
BA = Bureau Assessment – Species known or suspected on USDI-BLM land that are not federally listed, state listed, or BS and that are on listed by the WDFW but not eligible as BS.
BT = Bureau Tracking - All species known or suspected on USDI-BLM land that are not federally listed, state listed, BS, or BA, and that are WDFW monitor or species of special concern.
- 5 Listed by the WDFW. WDFW classifications for Species of Concern include:
SE = State Endangered Species
ST = State Threatened Species,
SC = State Candidate Species,
SS = State Sensitive Species,
SM = State Monitor. State Monitor species are not considered Species of Concern, but are monitored for status and distribution. They are managed by the WDFW, as needed, to prevent them from becoming endangered, threatened, or sensitive (WDFW 2006a).
All SE, ST, SC, and SS species are also designated Priority species (PS) by the WDFW; there are also a number of game species that are designed PS. Game species that have no other status except PS, were not included (e.g. wild turkey, mink) (WDFW 2006b).

Table 2.4-2. Productivity (number fledged) of bald eagle territories in the Boundary Project vicinity.

Year	Nesting Territory			
	Sand Creek	Everett Island (Z Canyon)	Box Canyon	Metaline
1989	1	--	--	
1990	2	--	--	
1991	2	--	--	
1992	2	--	--	
1993	2	--	--	
1994	3	--	--	
1995	3	--	--	
1996	Active, unknown	--	--	
1997	Active, unknown	--	--	
1998	2	--	--	
1999	Active, unknown	2	--	
2000	Unknown	Unknown	2	
2001	Unknown	Unknown	Unknown	
2002	Unknown	Unknown	Unknown	
2003	Unknown	Unknown	Unknown	
2004	Unknown	Unknown	Unknown	
2005	Active, unknown	2	Active, unknown	
2006	Active, unknown	Unknown	1	Active, unknown

Sources: WDFW PHS database, SCL unpublished data; and 2005–2006 reconnaissance trips

Several ponds and wetlands in the Project vicinity were surveyed for amphibians as part of a USFS-commissioned project for the CNF Sullivan Lake Ranger District (Hallock 2003). Those surveys documented the presence of western toads (*Bufo boreas*) and Columbia spotted frogs (*Rana luteiventris*) on the CNF. Although no comprehensive surveys were conducted at sites within the Project area, several of the sites surveyed by Hallock (2003) were within the general Project vicinity (Table 2.4-3). Western toads were mostly associated with lakes (Hallock 2003). Columbia spotted frogs were documented in a variety of lentic habitats, most of which were perennial; the most productive sites appeared to be modified by beaver. In addition, a single Columbia spotted frog was observed by SCL fisheries biologists in June 2006 in a wetland on the east side of the Pend Oreille River, just downstream of the dam. No northern leopard frogs (*Rana pipiens*) were found, and no population has been documented in Pend Oreille County since the 1970s, although unconfirmed sightings were recorded on the Kalispel Indian Reservation in 2001 (Hallock 2003). However, the USFS has recently been conducting surveys for this species in the CNF and there may be new information on leopard frogs in the Project vicinity.

Table 2.4-3. Sites surveyed for amphibians and reptiles by Hallock (2003) that are within or near the Project area.

Site	RTE Species Observed
Box Canyon Area	None
Crescent Lake wetland	Western toad, Columbia spotted frog
South Peewee Pond	Columbia spotted frog, western toad
King Hills Pond	Columbia spotted frog
Boundary Lake wetland	Columbia spotted frog, western toad
Slate Creek wetland	Columbia spotted frog, western toad
Lead King Wetland	Columbia spotted frog
FR 3155010 wetlands	None
Halliday Fen	None
Frisco Standard Ponds (near substation)	Columbia spotted frog
Lime Creek wetland	None
Lake Lucerne wetland	None
Lucky Strike Pond	Bullfrog, western toad
Mill Pond	None

Other federally listed species that have been documented historically in the Project vicinity include the grizzly bear (*Ursus arctos*), gray wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), and woodland caribou (*Rangifer tarandus caribou*). However, observations of these species in the general area of the Project are rare in recent years. More detail on the status, habitat requirements, and occurrence of the RTE wildlife species in the Project vicinity, including historical occurrences, is provided in the PAD (SCL 2006a).

Need for Additional Information

The existing information provides a starting point for compiling more comprehensive information on RTE wildlife species in the Project vicinity. However, available data are incomplete or lacking for many RTE wildlife species and do not provide information on habitat location and distribution in or near the Project vicinity. Additional baseline data on habitat and occurrence will help assess potential Project-related impacts on RTE wildlife species.

2.5. Detailed Description of Study

Study Area

The “primary” study area for the RTE wildlife study will extend approximately 18 miles along the Pend Oreille River from the Box Canyon tailrace downstream to the U.S.-Canada border (see Figure 1.3-2 in the Proposed Study Plan [PSP; SCL 2006b] for a location map of the Boundary Project) and will encompass the following:

- Downstream of Metaline Falls — The reservoir, fluctuation zone under normal operations (forebay elevations 1,970–1,990 feet NGVD 29 [1,974–1,994 feet NAVD 88]), and the land within the FERC Project boundary (Project area). The Project area includes most Project facilities, the area 200 horizontal feet (i.e., along the ground

surface, perpendicular to the shoreline) beyond the high water level along both reservoir shorelines, and the transmission line right-of-way (ROW) from the powerhouse to the BPA interconnection.

- Upstream of Metaline Falls — The reservoir, fluctuation zone (elevation \approx 1,985–2,015 feet NGVD 29 [1,989–2,019 feet NAVD 88], as measured at the USGS gage below Box Canyon Dam) and the land within approximately 200 horizontal feet beyond the high water level (approximately 2,015 feet NGVD 29 [2,019 feet NAVD 88]) along both reservoir shorelines extending to the FERC project boundary for the Box Canyon Project.^{2 3}
- The BWP (155 acres) and adjoining SCL-owned property (85 acres).
- 100 feet around any Project works areas that extend outside the Project boundary.
- 50 feet along both sides of Project-related roads, which include the road between the Boundary Dam and the Vista House, the road to the dam off County Road 2975, and the road from the Vista House to SR31.
- 100 horizontal feet along both sides of the river from Boundary Dam to the U.S.-Canada border (approximately 0.9 mile).

The ability to conduct RTE wildlife surveys within the primary study area outside the FERC Project boundary (mainly upstream of Metaline Falls) may be limited due to access constraints on private lands in this area.

For purposes of addressing RTE wildlife species with large home ranges, a secondary study area will be established that covers the area between the near ridgelines east and west of the Project area. The eastern boundary of the secondary study area will roughly align with Boundary Ridge, Crowell Mountain, and Sand Creek Mountain and the ridge between the reservoir and Sullivan Lake. On the west side, the boundary will follow a line connecting Frisco, Abercrombie, Litton, and Baldy mountains.

Proposed Methodology

Many of the RTE wildlife species that inhabit northeastern Washington, particularly the mammals, are wide-ranging and typically use habitats that are relatively isolated from development and human activity. As a result, RTE mammal species are rarely observed near the Boundary Project, and would be expected to use the habitats in the primary study area mostly during dispersal or seasonal migration. Similarly, some of the RTE bird species potentially occurring in the Project vicinity may only occur rarely and/or during migration. The RTE

² The estimated fluctuation range of approximately 1,985–2,015 feet upstream of Metaline Falls is based on the review of existing hydrology data, as described in section 1.3.5 of the PSP (see Table 1.3-1; SCL 2006b). Following completion of the Hydrology Dataset and Statistics in March 2007 (see Attachment 1, section 3.1 of this RSP), SCL will review and refine, as necessary, this elevation range

³ As indicated in this and other study plans in the RSP, SCL agrees it is appropriate to study the existing fluctuation range of the reservoir; however, for development of the Preliminary Licensing Proposal (PLP) and License Application, SCL will base its assessment of potential protection, mitigation, and enhancement measures on that portion of the fluctuation zone that is determined to be under the influence of Boundary Project operations, versus the effects of inflows and Metaline Falls that are beyond the control of the Project.

wildlife study will therefore focus on identifying potential habitat and movement corridors for RTE wildlife in the study area. Surveys will be conducted for the few species that may use study area habitats year-round or during the breeding season and that may be affected by Project-related activities. The RTE wildlife study will consist of four tasks, each of which is described below. A Washington State Scientific Collection Permit will be obtained from the WDFW prior to conducting any surveys that involve handling wildlife.

Task 1: Information Update

The list of RTE wildlife species potentially occurring in the study area (Table 2.4-1) will be updated, including an accounting of species omissions and additions, changes in status, and any new observation records in the primary or secondary study areas. The primary sources for acquiring updated information include the following:

- U.S. Fish and Wildlife Service, Spokane Office
- WDFW, Priority Habitats and Species Program. <http://wdfw.wa.gov/hab/phspage.htm>
- WDFW, Spokane Office (Steve Zender)
- BLM Sensitive Species List
- USFS Regional Forester's Sensitive Species List
- USFS, CNF Headquarters (Chris Loggers)
- USFS, CNF Sullivan Lake Ranger District (Jim McGowen and Mike Borysewicz).
- Sullivan Watershed Analysis

This task will also include summarizing existing habitat and distribution data in northeastern Washington for RTE species potentially occurring in the primary and secondary study areas. All historic records of RTE wildlife species occurrences in the primary and secondary study areas obtained from the various sources will be entered into a Geographic Information System (GIS) database for the Project. In addition, this task will include a summary of the habitat requirements for all RTE species with occurrence records in the primary or secondary study areas.

Task 2: Identification of Potential Habitat for RTE Wildlife Species

Once the RTE wildlife species list is updated, an assessment of whether potential habitat is present in the primary study area for these species will be conducted. This assessment will be based on information from the literature and local agency documentation on habitat requirements for RTE wildlife species, and existing vegetation cover types and elevation range in the study area. The assessment will be focused on identifying areas that potentially provide habitat for amphibians and nesting birds, as well as for large mammals with ranges that encompass the Project vicinity (i.e., wolves, grizzly bears). To the extent possible, movement corridors for large mammal RTE species will be identified using information provided by the results of Task 2 of the Big Game Study (Study No. 19). The assessment of potential habitat will not be conducted for birds that are either very rare because the study area is considerably outside their typical habitat or range (i.e., merlins, great gray owls), or that may use the reservoir only occasionally during migration (i.e., common loons [*Gavia immer*], American white pelicans

[*Pelecanus erythrorhynchos*]). The results of this task will be a series of GIS maps showing potential habitat in the primary study area for each of the RTE species included in the assessment.

Task 3: RTE Wildlife Surveys and Habitat Assessment

Because of the number and diversity of RTE wildlife species potentially occurring in the study area, several types of field surveys will be conducted to collect additional data on species presence, habitat suitability, and potential Project-related threats. Survey efforts will be focused on amphibian and avian species using the primary study area. RTE mammals potentially occurring in the primary study area are wide ranging and only occasionally observed. Although these species cannot be effectively surveyed, information on high quality habitat in the primary study area, possible movement corridors, and potential bottlenecks to movement will be collected. The following sections describe the various field survey and habitat assessment efforts.

Task 3(a): Amphibian Surveys

Potential breeding habitat for the three RTE amphibian species (western toad, Columbia spotted frog, and northern leopard frog) potentially occurring in the primary study area will be surveyed using Visual Encounter Survey (VES) techniques (Heyer et al. 1994; Olson and Leonard 1997). Since all of these species are known to breed in lentic habitats, surveys will focus on shallow waters in the reservoir and wetlands in the study area. Surveys will be conducted at least four times during the amphibian breeding season (late March–June) to maximize detection probability. Each VES visit will involve searching the water column, substrate, emergent and submerged vegetation, and the shorelines of wetlands and shallow water areas of the reservoir. Dipnets will be used to aid in the search by sweeping the water and vegetation. Rocks and logs will be turned over to search for hidden individuals. Survey efforts at each site will be recorded (e.g., area/length covered, time, and number of sweeps) to standardize abundance estimates. All adults, egg masses, and larvae will be identified to species and released.

Task 3(b): Seasonal Surveys for Avian RTE Species

Surveys will be conducted during each season (winter, spring, summer, and fall) over a 2-year period, to document observations of RTE wildlife or their sign (8 surveys total). These seasonal surveys will focus on determining use of primary study area habitats by RTE avian species. Surveys of the reservoir and adjacent habitats, including cliffs and waterfalls, will be conducted by boat. Terrestrial-based survey routes will be established along roads and trails in the BWP and in the vicinity of Project facilities.

The spring and summer surveys will be timed to document active bald eagle nest sites and productivity, and will most likely be conducted in April and June. During the course of the spring and summer surveys, biologists will document the status of the bald eagle nesting territories but will avoid approaching the nest sites until after young have fledged. In addition, biologists will document perch trees and forage areas used by bald eagles during the nesting season and will note any nearby sites of human development and use. Spring surveys are also expected to determine use of the study area by RTE woodpecker species and migratory waterfowl, as well as the peregrine falcon (*Falco peregrinus*). Summer surveys in June will

document observations of nesting activity by ospreys (*Pandion haliaetus*), other raptors, black swifts (*Cypseloides niger*) and turkey vultures (*Cathartes aura*) in and near the primary study area. The main purpose of the winter surveys will be to determine winter use of the reservoir by bald eagles; migratory raptors and waterfowl may be observed during fall surveys.

Task 3(c): RTE Wildlife Habitat Assessment

During the RTE amphibian and seasonal avian surveys, sites that potentially provide high-quality habitat for one or more species will be mapped. High quality habitat will be identified based on published habitat requirement information obtained in Tasks 1 and 2. For example, forest stands with high snag densities may be mapped as potentially high quality habitat for some of the RTE woodpecker species. The high-quality habitat areas will be entered into the GIS and displayed on the maps of potential habitat produced as part of Task 2. Qualitative data will also be recorded in the field to describe habitat conditions.

In addition, this task will involve mapping locations along the reservoir that represent the potential crossing opportunities for RTE mammal species, as well as sites that could be possible bottlenecks to movement. This effort will be focused on the area between Boundary Dam and Metaline Falls, with an emphasis on identifying locations that could be used by grizzly bears or wolves. These areas will be mapped in the field, entered into the GIS and displayed on the maps of potential habitat produced as part of Task 2.

Task 4: Documentation and Effects Assessment

Locations of all RTE wildlife detections will be recorded and mapped with Global Positioning System (GPS), on 7.5-minute USGS quad maps, or on Mylar overlays of the SCL 2005 true-color aerial photos (scales of 1 inch = 1,000 feet and 1 inch = 600 feet) or on enlarged versions of these photographs (1 inch = 100 feet). Bald eagle nest and perch trees will be similarly mapped; forage areas will be generally delineated on USGS quad maps or aerial photographs. In addition, the habitat characteristics for each RTE species occurrence will be recorded. Observations and habitat information will be entered into a GIS database for summarization.

Each RTE species documented in the study area during Task 3 (3a and 3b) will also be evaluated in the field for potential Project-related impacts and other threats. Data recorded will include location relative to the reservoir fluctuation zone, existing recreation areas, and/or Project facilities; evidence of habitat inundation or desiccation; grazing; logging; and proximity to erosion, human development/use, and/or invasive species infestations (including aquatic weeds that may affect RTE waterfowl).

Wide-ranging RTE species potentially occur in the study area but are unlikely to be observed during surveys. The assessment of effects for these species will be qualitative and will utilize the map developed in Task 3(c) to determine the number and significance of sites along the reservoir that could be possible bottlenecks to movement. In addition, the cumulative effects of roads, development, and other land uses on habitat quality for these species will be assessed.

2.6. Work Products

The results of the RTE wildlife study will be compiled and discussed in a final study report, written in standard scientific format. The report will include the following information:

- An updated target list of RTE wildlife species known to occur or potentially occurring in the primary and secondary study area, with refined information on habitat requirements. The table will be expanded to include a description of potentially suitable habitat in the study area for each target species. Rationale will be provided if it is determined that no potential habitat is present (e.g., elevation too low, wrong vegetation communities).
- GIS maps of potentially suitable habitat for RTE wildlife species in the primary study area that also depict areas of high quality habitat, as determined in the field for amphibian and avian RTE species, and movement corridors and bottlenecks for large mammal RTE species.
- A summary of the methods used to conduct the field surveys for RTE amphibians and avian species. This section will include an accounting of when the surveys were conducted and a map of the areas covered.
- The results of the RTE wildlife surveys, including a list of new and previously documented RTE wildlife species observed in the study area. A brief description of each species will be provided, which will address habitat requirements, known distribution within the primary and secondary study areas, and habitat use within the primary study area.
- A map of historical and new RTE wildlife detections in the primary and secondary study areas, at appropriate scale, with unique identification labels for each occurrence.
- Completed data sheets for all occurrences.
- A comprehensive list of all wildlife species observed and identified during surveys.
- A discussion of potential threats and Project impacts to RTE wildlife species occurring or potentially occurring in the study area, as determined from the results of this study. The full assessment of potential Project-related impacts, including the effects of the type and timing of Project operations and maintenance and Project-related recreation, will be part of the integrated resource analysis (see Attachment 1, section 2.4 of this RSP).

GIS layers and metadata of RTE wildlife occurrences and potential habitat will be made available to the agencies, if requested. All new occurrences of RTE species documented in or near the study area will be provided to the WDFW for inclusion in the PHS database.

2.7. Consistency with Generally Accepted Scientific Practice

The methods (as described above) are consistent with generally accepted practices in the scientific community for conducting RTE wildlife surveys.

2.8. Consultation with Agencies, Tribes, and Other Stakeholders

This study plan was prepared with input from the USFS, WDFW, USFWS, and Pend Oreille County Noxious Weed Control Board, which was provided at a meeting of the Terrestrial Resources Workgroup meeting on July 26, 2006. Comments provided by the Terrestrial Resources Workgroup on the draft study plan are summarized in the PSP Attachment 5-1 (SCL 2006b) and can also be found in the workgroup meeting summaries, available on SCL's relicensing website (<http://www.seattle.gov/light/news/issues/bndryRelic/>). Additional comments were provided by the WDFW in written comments (letter from D. Robison, WDFW, to M. Lynn, SCL, August 28, 2006) and a follow-up phone conversation (D. Robison, WDFW, personal communication, August 28, 2006) (see PSP Attachment 5-1 [SCL 2006b]). A proposed plan for the RTE Wildlife Species Study addressing these comments was included in the PSP that was filed with FERC on October 16, 2006.

Since filing the PSP, SCL has continued to work with relicensing participants on its proposed study plans. In response to comments made during the November 15 study plan meeting and comments filed with FERC by the USFS (2007) and USFWS (2007), SCL has further modified the RTE Wildlife Species Study plan. (SCL's responses to comments are summarized in Attachment 3 and consultation documentation is included in Attachment 4 of this RSP.) Modifications included adding clarification, additional supporting rationale, and additional detail to address USFS and USFWS comments. SCL believes that these agencies' comments are adequately addressed in this revised plan.

2.9. Schedule

The RTE Wildlife Species Study will be conducted in 2007–2008, with habitat-related tasks and VES surveys planned for 2007. The seasonal surveys for avian species will be conducted for 2 years to optimize the chances that species will be observed. The expected schedule is as shown in Table 2.9-1.

A second season of VES surveys for breeding RTE amphibians is not anticipated, but it is possible that weather conditions or other issues may require some additional field work for these species in 2008.

Table 2.9-1. Schedule for RTE Wildlife Species Study.

Activity	Timeframe
Update the target RTE species list	January–February 2007
Identify potential habitat for RTE species	February–September 2007
Conduct 2007 seasonal surveys for avian species (4)	January–December 2007
Conduct VES surveys for breeding RTE amphibians (4)	late March – June 2007
Conduct RTE wildlife habitat assessment	January–December 2007
Prepare interim study report (first-year results)	November–December 2007
Distribute interim study report	January 2008
Meet with relicensing participants to review first year efforts and results and discuss plans for any second year efforts	February 2008
Include interim report in Initial Study Report (ISR) filed with FERC	March 2008
Hold ISR meeting and file meeting summary with FERC	March 2008
Conduct 2008 seasonal surveys for avian species	January–December 2008
Prepare “draft” final study report	October–November 2008
Distribute “draft” final study report for relicensing participant review	December 2008
Meet with relicensing participants to review study efforts and results and “cross-over” study results	January 2009
Include final study report in Updated Study Report (USR) filed with FERC	March 2009
Hold USR meeting and file meeting summary with FERC	March 2009

2.10. Progress Reports, Information Sharing, and Technical Review

In addition to preparing the study reports (as described in the above), there will be several opportunities for information sharing and technical review with relicensing participants. Prior to conducting the RTE wildlife surveys biologists will contact the USFS and BLM biologists to discuss proposed survey times relative to current-year weather conditions. In addition, agencies will be invited to participate in survey efforts. Preliminary survey results will be communicated to relicensing participants in early 2008, as described in Attachment 1, section 2.3 of this RSP.

2.11. Anticipated Level of Effort and Cost

RTE wildlife surveys are expected to involve about 560 hours of field time (2 biologists for approximately 36 days each), as well as additional time for data summary, analysis, and reporting. The estimated cost for this study is \$77,000–\$90,000.

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