

Jackson Hydroelectric Project (FERC Project No. 2157)
Revised Study Plan 12: Northern Spotted Owl Surveys
Final Technical Report

Prepared for:

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Executive Summary

The goals of the Northern Spotted Owl Surveys (Revised Study Plan 12) were to identify and map suitable northern spotted owl habitat in lands associated with the Jackson Hydroelectric Project (Project), and to document spotted owl occurrences on those lands. The study was completed in three phases: habitat assessment, survey station layout, and surveys.

Habitats were assessed for suitability as spotted owl habitat by using aerial photos, cover type maps, and stand inventory information on tree density and tree size. Some stands could not be clearly categorized using these methods, and were reviewed in the field by an experienced spotted owl biologist. Following the assessment, habitat of sufficient quality and quantity to warrant surveying was divided into three survey areas with potential for spotted owl use: Lake Chaplain, Spada Lake/Section 30, and Williamson Creek. Survey stations were established in each area, consistent with the U. S. Fish and Wildlife Service protocol (USFWS 1992).

Three complete survey visits were conducted to each survey area in 2007, and three in 2008, following USFWS (1992) protocol for a 2-year survey. No spotted owls were detected in either year, and no follow-ups were required. Several other owl species were detected. Survey visits and owl detections are listed in Tables 4-2, 4-3, and 4-4.

1.0 STUDY OBJECTIVES AND DESCRIPTION

The goals of Revised Study Plan 12 were to identify and map suitable northern spotted owl habitat and to document spotted owl occurrences within the Project area, on Wildlife Habitat Management Plan (WHMP) lands, and on National Forest System (NFS) lands below Culmback Dam in Section 30, Township 29 North, Range 09 East (Section 30) that could be affected by increased recreational activity and/or human access that could be proposed during relicensing. Results of this study will also be used by the District to evaluate forest management activities conducted as part of the WHMP, and will be provided to the FERC to use in conducting Endangered Species Act Section 7 consultation with the USFWS and U. S. Forest Service (USFS).

This study was conducted in three phases: 1) forest habitat in the study area was reviewed for potential spotted owl habitat; 2) survey stations were laid out to ensure adequate coverage of potential spotted owl habitat; and 3) spotted owl surveys were conducted. Due to time constraints, the 2007 portions of this study were not conducted as three discrete phases with intermediate review by stakeholders, as originally planned.

2.0 BACKGROUND INFORMATION

The Jackson Hydroelectric Project (Project) lies within the Sultan River basin, Washington. The study area consists of lands within the FERC Project boundary, the WHMP lands, and NFS lands below the Culmback Dam in Section 30. There are no known spotted owl site centers or federally designated northern spotted owl critical habitat located within the study area (Snohomish County Public Utility District 2005, USFWS 2008). A known resident single spotted owl site is located in the Pilchuck River basin approximately 3 miles northwest of Culmback Dam, and a known reproductive spotted owl site is located over 1 mile northeast of the Williamson Creek tract.

3.0 METHODS

3.1 Habitat Evaluation

All forest habitats in the study area were reviewed for their potential as habitat for the northern spotted owl (Figures 3.1 through 3.5). The evaluation was conducted in a series of steps. The first step consisted of reviewing aerial photographs of the entire Project area taken in 2003 and comparing them to a vegetation cover type map of the study area around Spada Lake. During the review of aerial photos, areas (polygons) classified as old-growth conifer forest with large conifer trees were assumed to provide potentially suitable habitat for spotted owl nesting, roosting, and foraging. Similarly, polygons classified as non-forest, or early-successional forest that appeared to lack large conifers were assumed not to be suitable for spotted owls. Updated (2007) aerial photos of the study area became available subsequent to the initial habitat evaluation. These updated photos are shown in Figures 3.1 through 3.5.

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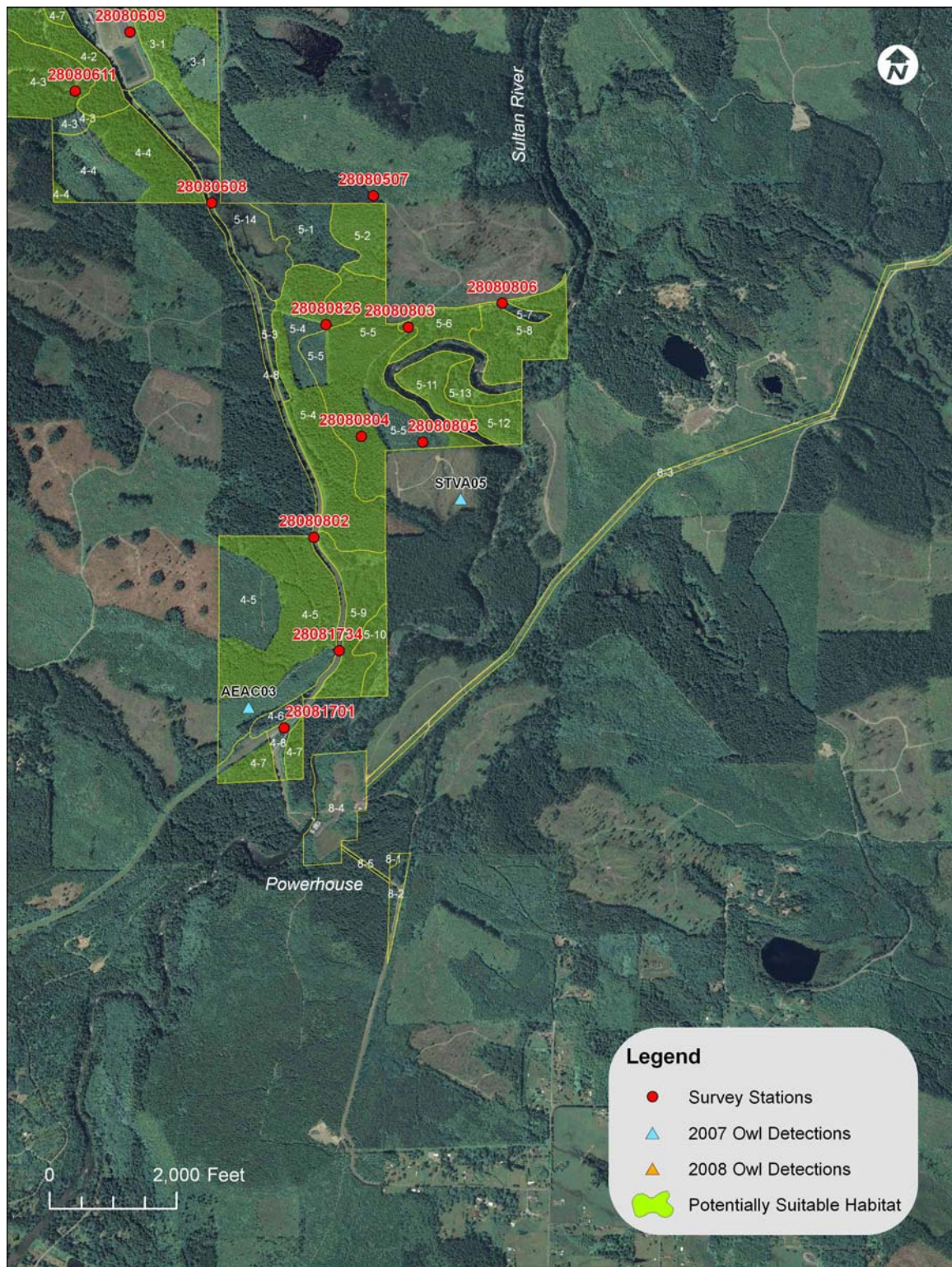


Figure 3-2. Lake Chaplain – South Map of Spotted Owl Habitat and Survey Stations.



Figure 3-3. Spada Lake Including Section 30 – West Map of Spotted Owl Habitat and Survey Stations.



Figure 3-4. Spada Lake – Central Map of Spotted Owl Habitat and Survey Stations.

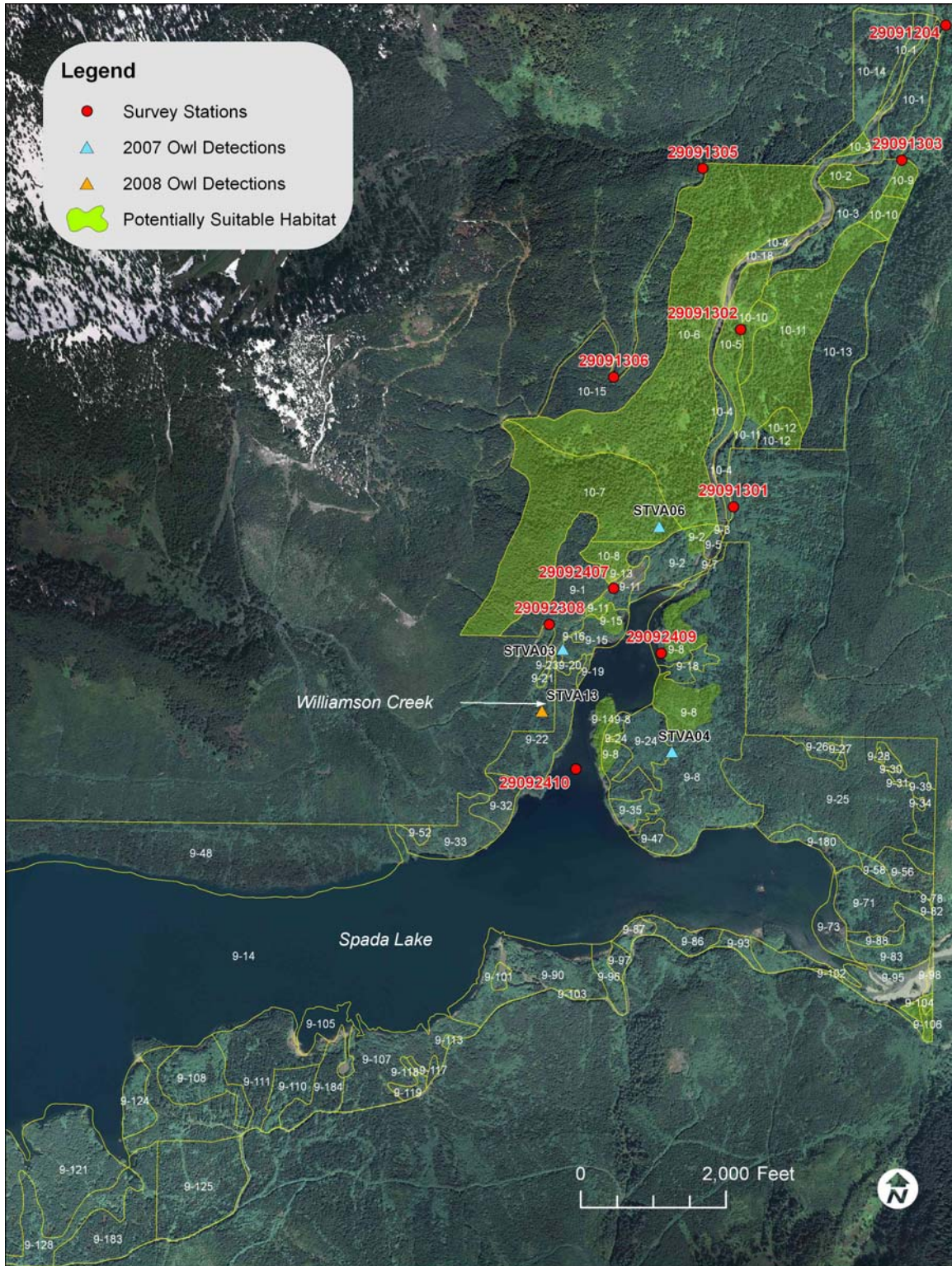


Figure 3-5. Williamson Creek and East Spada Lake – Map of Spotted Owl Habitat and Survey Stations

During the second step, the remaining cover type polygons were assessed for owl habitat potential, using available forest inventory information (Hanson and Bailey 1987, McCaulay and Associates LTD. 1990). Inventory information covered polygons at Lake Chaplain, Williamson Creek and a few scattered locations around Spada Lake. Using the inventory information, current average tree diameters at breast height (DBH) were estimated for each polygon. To compensate for the age of the inventory information (17 and 20 years old, depending on the source), five inches were added to the estimated average DBH from the inventory information. The percent conifer in each stand was calculated using tree-per-acre information for the various tree species. Polygons with stands having at least 70 percent conifer stems, an estimated average DBH (adjusted) of at least 15 inches, and total density between 110 and 300 trees per acre were tentatively classified as potentially suitable habitat. Polygons not meeting this definition were tentatively classified as non-suitable habitat. From these two preliminary classifications of spotted owl habitat, a mix of polygons covering a range of cover types and geographic locations was identified for the final step of field review.

Field review consisted of a qualitative assessment of stand conditions and the ability of those conditions to support nesting, roosting and foraging habitat for spotted owls. Stand characteristics that were considered during the review included tree stem density, canopy closure, presence of an open flyway below the live crown, presence of logs, number of snags, and amount of understory vegetation. Polygons providing a closed-canopy, conifer-dominated forest with a moderately open flyway and a moderate level of down logs, snags or shrubs were classified as suitable habitat for survey purposes. If habitat conditions varied significantly within a polygon and the variation could be delineated on the aerial imagery, the polygon was further divided to account for the variation.

3.2 Survey Station Layout

After the habitat evaluation, a landscape review was conducted to identify landscapes with enough potentially-suitable habitats to warrant survey. These landscapes were then divided into survey areas. Polygons of potentially-suitable habitat that were small (generally less than 40 acres) or isolated from other polygons of potentially-suitable habitat were not considered suitable for survey.

Station layout in the survey areas was consistent with federal protocol (USFWS 1992). To the extent practical, survey stations were placed along roads and trails that could be surveyed at night. In areas with no safely accessible roads and trails, daytime walking routes were established to cover the area, as recommended by the USFWS (1992).

3.3 Northern Spotted Owl Surveys

The spotted owl survey methods follow USFWS (1992) protocol. The 2-year survey protocol was used, in which three complete visits were made in 2007 and three additional visits were made in 2008. According to the USFWS (1992), 2-year surveys are preferable to 1-year surveys (in which six visits take place in 1 year), because the former provides a higher likelihood of accurately determining presence or absence of spotted owls.

Most stations were surveyed at night for a minimum of 10 minutes, during which time surveyors broadcasted owl calls and listened for responses. The three visits were spread out throughout the survey season, as directed by the federal protocol.

Those stations not safely accessible by road or trail were surveyed by day. Day stations were surveyed for a minimum of 15 minutes. Time was increased for day stations to compensate for the tendency of owls to respond more slowly between dawn and dusk. Daytime survey routes in Williamson Creek were surveyed both at fixed points, and using the continuous walking method between stations, as described in the federal protocol. The continuous walking method was also used between some fixed stations at Spada Lake in 2008, where, due to late, heavy snow conditions, surveyors accessed some road stations during daytime hikes rather than night drives.

4.0 RESULTS

4.1 Habitat Evaluation

The habitat evaluation resulted in the classification of 2,927 acres of potentially suitable northern spotted owl habitat in four geographic areas: Williamson Creek, Spada Lake, Section 30 below Culmback Dam, and Lake Chaplain (Figures 3-1 through 3-5). Potentially suitable habitat ranged from mature and old-growth forest capable of providing nesting, roosting and foraging habitat, to younger, even-aged forest capable of providing marginal roosting and foraging habitat.

Out of these 2,927 acres, 46 acres were not considered suitable for survey (Table 4-1). Polygons 9-104 and 9-105, at the east end of Spada Lake, contained only 3 acres of potentially suitable spotted owl habitat that are not contiguous with other suitable habitat in the study area or larger blocks of potentially suitable habitat outside the study area (Figure 3-5). It is unlikely spotted owls would make substantial use of this habitat, so these polygons were not included in the survey.

Table 4-1. Summary of the Potentially Suitable Northern Spotted Owl Habitat in the Study Area.

Geographic Area	Total Area (acres)	Potentially Suitable Habitat (acres)	Isolated Potentially Suitable Habitat (acres)	Habitat Suitable for Survey (acres)
Lake Chaplain	2,354	1,746	0	1,746
Spada Lake	3,669	599	46	553
Section 30 (NFS land)	659	250	0	250
Williamson Creek	722	332	0	332
TOTAL	6,745	2,927	46	2,881

The second area with potentially suitable habitat that was not covered in the survey is along the north shore of Spada Lake (Figure 3-4). Polygons 9-69 and 9-70 consist of 39 acres of isolated, low-quality habitat. There may be other pockets of similar low-quality habitat in the surrounding area, but the total amount is expected to be limited and no significant amount of better quality habitat is in close proximity. Lastly, a 4-acre portion of Polygon 9-51 supports the only larger conifer trees in the immediate area. These trees are on a very steep slope. The trees in this patch are widely spaced and may not provide the canopy closure required to be considered suitable habitat. The 4 acres were conservatively classified as potentially suitable habitat based on aerial photo interpretation, but were eliminated from surveys due to the small, isolated nature of the patch.

4.2 Survey Layout

The 2,881 acres of habitat classified for survey were divided into three survey areas: Lake Chaplain, Spada Lake/Section 30, and Williamson Creek (Table 4-1). The initial layout of survey stations was conducted along with the first survey visits at Spada Lake and Lake Chaplain. Following those first visits, some revisions were made to refine survey coverage. The final survey station layout consists of a total of 10 survey stations to cover the 332 acres of surveyable habitat (habitat of sufficient quality and quantity to warrant survey) in the Williamson Creek survey area (Table 4-1, Figure 3-5); 15 survey stations to cover the 803 acres of surveyable habitat in the Spada Lake/Section 30 survey area (Figure 3-3); and 34 survey stations to cover the 1,746 acres of surveyable habitat in the Lake Chaplain survey area (Figure 3-1 and 3-2). Two additional stations were surveyed at Lake Chaplain in 2008, to increase coverage in the vicinity of an incidental owl observation made in 2007 by contractors conducting other studies for the Project.

4.3 Northern Spotted Owl Surveys

Six total visits were made over two years (2007 and 2008) to all stations in the Lake Chaplain, Spada Lake/Section 30, and Williamson Creek survey areas. Weather conditions during all visits were acceptable (i.e., observers could hear any owls present within the full auditory range of the station). Dates of individual visits can be found in Tables 4-2, 4-3 and 4-4.

No spotted owls were detected during the formal surveys or during any other times the surveyors were present in the study area. No daytime follow-ups were needed. Several owls of other species were detected; these are listed in Tables 4-2, 4-3 and 4-4. These tables also include owl species recorded during fieldwork for Revised Study Plan 11: Marbled Murrelet Surveys, in areas where marbled murrelet and spotted owl surveys overlapped. Barred owls, possible competitors of spotted owls, were detected in all three spotted owl survey areas.

Lake Chaplain: Three complete visits were made at Lake Chaplain in 2007, and three complete visits were made in 2008. One of the stations was visited by day. No spotted owls were detected. Barred owls, great horned owls, and northern saw-whet owls were detected during surveys, and one female long-eared owl was detected during marbled murrelet surveys in the area.

Two incidental observations of potential spotted owls were reported north of Lake Chaplain, outside of the Project area. One observation was made on Monroe Camp Road in 2005 by Lake Chaplain Filtration Plant personnel; the second was made in early August 2007 by contractors working on the Project. They reported a large owl that they considered to be possibly a spotted owl, also along the Monroe Camp Road. No follow-up visits were conducted, but two new stations were added to the Lake Chaplain owl route for 2008. The new stations were added to improve coverage of habitat immediately north of the Project boundary in Sections 25 and 26, R07E, T29N, in the vicinity of the potential spotted owl sighting.

Spada Lake/ Section 30: Three complete visits were made to Spada Lake (including Section 30) in 2007, and three complete visits were made in 2008. Two of the 15 stations were surveyed by day during all visits in 2007. One of the night stations in Section 30 was difficult to locate at night, so it was surveyed at dusk during both years. In 2008, deep snow kept roads closed late into the survey season; as a result of snowshoe-hiking conditions, eight of the 15 stations were surveyed by day in visit 1, four were surveyed by day in visit 2, and two were surveyed by day in visit 3.

During 2007, no owls of any species were detected during surveys, although marbled murrelet surveyors in the area detected one barred owl in Section 30, and one northern pygmy-owl along the Culmback Dam road. During 2008, single barred owls were detected during surveys in Section 30; marbled murrelet surveyors in the area also detected a barred owl and a northern saw-whet owl near the South Shore Road. Also in 2008, another contractor observed and photographed a barred owl adult and recently-fledged (downy) juvenile along the South Shore Road.

One day-visit was made to the North Spada Lake area on May 7 during the 2007 field review discussed in Section 4.1. Three stations along the shoreline were called while surveyors were accessing the habitat for assessment. No owls were detected. The habitat was considered unsuitable for spotted owls, and surveys were discontinued.

Williamson Creek: Three complete visits and one incomplete visit were made to the Williamson Creek route in 2007, and three complete visits were made in 2008. All stations were visited by day. One station was surveyed by boat, and an off-road area of old-growth habitat between two of the stations was surveyed through the continuous walking method (USFWS 1992) during each visit. On Visit 2 in 2007, the route was not completely surveyed due to actively-calling barred owls near two of the stations. Barred owl presence may suppress spotted owl responses to broadcasted calls, so survey of those two stations was delayed. Weather and survey logistics prevented the completion of the survey of those two stations within seven days, as required by federal protocol. To ensure those missed stations did not affect the quality of the overall survey, an additional visit was conducted to the two missed stations, the four surrounding stations, and an associated walking route.

Table 4-2. Lake Chaplain Northern Spotted Owl Survey Results.

Visit #	Date of Visit	Detections	Notes
2007 Visit 1	May 14, 15	Barred Owl (STVA 02) ³	Night visit; three responses heard E of Swamp Road, possibly one bird.
2007 Visit 1	May 14, 15	Northern Saw-whet Owl (AEAC 01) ³	Night visit; one bird heard NE of lake.
2007 Visit 1	May 14, 15	Northern Saw-whet Owl (AEAC 02) ³	Night visit; one bird heard NW of lake.
2007 Visit 1	May 14, 15	Northern Saw-whet Owl (AEAC 03)	Night visit; one bird heard near powerhouse gate.
2007 Visit 2	June 26	Barred Owl (STVA 05) ³	Night visit; one bird heard near Diversion Dam road.
2007 Visit 2	June 26	Unidentified small owl	Night visit; one bird heard NE of lake. Saw-whet owl or pygmy-owl.
2007 Visit 3	July 31, August 2	None	
2007 Incidental detection	June 22	Long-eared Owl (ASOT 01) ³	One bird heard by marbled murrelet surveyor, at dawn, on NW side of lake.
2007 Incidental detection	August	Unidentified large owl	Possible spotted owl reported by another contractor, outside of Project area.
2008 Visit 1	April 3	Barred Owl (STVA 07) ³	Night visit; one bird heard SW of lake.
2008 Visit 1	April 3	Barred Owl (STVA 08) ³	Night visit; one bird heard NW of lake.
2008 Visit 1	April 3	Unidentified large owl (BUVI or ASOT)	Night visit; one owl heard NW of lake. Not a Strix species. This bird may be the same as BUVI01, heard in same location, but may be long-eared owl.
2008 Visit 1	April 3	Great Horned Owl (BUVI 01) ³	Night visit; one bird heard NE of lake.
2008 Visit 1	April 3	Great Horned Owl (BUVI 02) ³	Night visit; one bird heard NW of lake.
2008 Visit 2	May 28, 29	Northern Saw-whet Owl (AEAC 04) ³	Night visit; one bird heard NW of lake, May 28.
2008 Visit 2	May 28, 29	Barred Owl (STVA 10) ³	Day visit; one bird heard E of lake, May 29.
2008 Visit 3	June 30	Barred Owl (STVA 11) ³	Night visit; one male heard near NE shore of lake.
2008 Visit 3	June 30	Barred Owl (STVA 12) ³	Night visit; one male heard N of lake beyond Project lands.

³ Owl codes correspond to mapped locations in Figures 3-1 and 3-2.

Table 4-3. Spada Lake / Section 30 Northern Spotted Owl Survey Results.

Visit #	Date of Visit	Detections	Notes
2007 Visit 1	May 7, 9	None	
2007 Visit 2	June 27, 28	None	
2007 Visit 3	August 1	None	
2007 Incidental detection	July 30	Northern Pygmy-owl (GLGN 01) ²	One bird heard by marbled murrelet surveyors.
2007 Incidental detection	May 11	Barred Owl (STVA 01) ²	One bird heard by marbled murrelet surveyors, NW of Culmback Dam.
2008 Visit 1	April 28, 30, May 4	Barred Owl (STVA 09) ²	Day visit; one bird heard in Section 30 on May 4.
2008 Visit 2	June 18, 19	Unidentified large owl (BUVI or ASOT)	Night visit; one owl heard along road to Culmback Dam on June 18. Not a spotted or barred owl; was either a long-eared owl or great horned owl.
2008 Visit 3	July 23	Barred Owl (STVA 14) ²	Day visit; one male bird heard and seen in Section 30, S of river.
2008 Visit 3	July 23	Barred Owl (STVA 15) ²	Dusk visit; one bird heard in Section 30, N of river. May be same bird as STVA 14.
2008 Visit 3	July 23	Unidentified large owl (BUVI or ASOT)	Night visit; one owl heard near Culmback Dam gate. Not a spotted or barred owl; was either a long-eared owl or great horned owl.
2008 Incidental detection	July 14	Northern Saw-whet Owl (AEAC 05) ²	One bird heard by murrelet surveyor near Olney Pass.
2008 Incidental detection	June 25	Barred Owl (STVA 11)	Daytime; adult and recently-fledged juvenile seen E of Rec Site 3 along road.
2008 Incidental detection	August 1	Barred Owl (STVA 16) ²	One bird seen by marbled murrelet surveyors: bird was just inside forest edge.

² Owl codes correspond to mapped locations in Figures 3-3 and 3-4.

Table 4-4. Williamson Creek Northern Spotted Owl Survey Results.

Visit #	Date of Visit	Detections	Notes
2007 Visit 1	May 3, 4	None	
2007 Visit 2	June 7, 8	Barred Owl (STVA 03, 04) ¹	Day visit; two birds heard near creek outlet.
2007 Visit 3	July 27	Barred Owl (STVA 06) ¹	Day visit; one bird heard near creek outlet.
2007 Visit 4	August 27	None	
2008 Visit 1	May 28	None	
2008 Visit 2	June 16	None	
2008 Visit 3	July 18	Barred Owl (STVA 13) ¹	Day visit; two birds heard south of creek outlet: M and F exchanging calls.

¹ Owl codes correspond to mapped locations in Figure 3-5.

5.0 DISCUSSION

All three phases of the study (habitat assessment, survey station layout, and both years of spotted owl surveys) have been completed. A total of 2,927 acres of habitat were assessed as potentially suitable for spotted owls and 2,881 acres were found suitable and surveyed to federal protocol. No spotted owls were detected during surveys. Barred owls, possible competitors with spotted owls, were detected in all three owl survey areas: Lake Chaplain, Spada Lake (including Section 30), and Williamson Creek. Barred owls may also be nesting on or near Project lands, as indicated by an incidental observation along the Spada Lake South Shore Road, of a recently-fledged barred owl.

Survey results indicate that spotted owls are not currently nesting on or regularly using Project lands, and that continued operation of the Project and implementation of the WHMP would not likely result in the direct modification of spotted owl nesting habitat. Suitable spotted owl habitat directly outside the Project area was not surveyed for the presence of owls; therefore, the potential for nesting owls on lands adjacent to the Project is unknown. Spotted owls have very large home ranges in the western Cascades of Washington, and are known to forage 1.8 miles or more from their nests in the summer and farther in the winter. Human activity that does not include blasting in the Project area could disturb nesting spotted owls up to 0.25 mile from the Project, if they are present, while blasting could disturb nesting owls up to 1.0 mile from the Project. Modification or removal of suitable spotted owl habitat within the Project area could reduce the amount of habitat available to one or more spotted owls nesting up to 1.8 miles away or dispersing through the Project area outside the nesting season. However, the number of spotted owls currently nesting in the western Cascades is small, so the potential for Project-related impacts is generally low.

6.0 REFERENCES

- Hanson, T. T., and B. R. Bailey. 1987. Lake Chaplain Timber Inventory Results. Pacific Forest Consultants, Inc. Portland, OR.
- McCaulay, C. R. 1990. Appraisal Report: 4,919 acres of land along the Sultan River, 7 to 18 miles north of Sultan, Snohomish County, Washington. U.S. Forest Service, Mt. Baker – Snoqualmie National Forest, Mount Lake Terrace, WA and Washington Department of Natural Resources, Olympia, WA.
- Snohomish Public Utility District. 2005. Henry M Jackson Hydroelectric Project FERC Project No. 2157: Pre-Application Document, Volume 1. Public Utility District No. 1 of Snohomish County, Everett, WA.
- U. S. Fish and Wildlife Service (USFWS). 1991. Protocol for surveying proposed management activities that may impact northern spotted owls – revised March 17, 1992. U.S.D.I. Fish and Wildlife service, Portland, OR. At: <http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/1992Mar17NSOSurveyProtocol.pdf>

U. S. Fish and Wildlife Service (USFWS). 2008. Endangered and threatened wildlife and plants; revised designation of critical habitat for the northern spotted owl; final rule. Federal Register 73 (157): 47326-47522. August 13, 2008.

Appendix E:
Responses to Draft Report Comments

STAKEHOLDER COMMENT	LICENSEE RESPONSE
Tulalip Tribes, Letter dated September 23, 2008	
May want to double check the recent revised designation of critical habitat and include a more recent document reference than 2005.	The U. S. Fish and Wildlife Service published a final revised designation of spotted owl critical habitat on August 13, 2008. Review of this final designation confirms the accuracy of the statement in Section 2. No federally designated critical habitat for the northern spotted owl exists in the study area. The citation in Section 2 has been updated to reflect this most recent USFWS designation.
The figures only include maps of surveyable suitable habitat. The objectives were to map suitable habitat. Are there maps additional to this document that illustrate suitable habitat?	The figures have been corrected. The word “surveyable” in the legend has been changed to “potentially suitable” to be consistent with the discussion of habitat in the text. In keeping with the objective of the study, all habitat with the potential for spotted owl use in the Project area was mapped and surveyed. Because the definition of suitability is somewhat unreliable when applied to young forest of the type present in the Project area, Biota Pacific routinely maps and surveys all “potentially suitable” habitat, which may include young forest of marginal suitability for spotted owls, but in which experience has shown spotted owls can be found foraging.
US Forest Service, Email dated August 25, 2008	
This report also is very good.	Comment noted.