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April 26, 2006 20943

Ms. Magalie Roman Salas, Secretary Federal Energy Regulatory Commission 888 First Street NE Washington, DC 20426

Dear Ms. Salas:

RE: Henry M. Jackson Project – FERC No. 2157 Project License Article 53 – Annual Report <u>Wildlife Habitat Management Program</u>



The 2005 Annual Report for the Jackson Project Wildlife Habitat Management № Program is enclosed. This report fulfills the requirement of the "Order approving with Modification Revised Wildlife Habitat Management Plan" (issued May 19, 1989, revised June 27, 1990 and February 9, 1996), which stated "A progress report shall be filed...by April 30...at 5-year intervals beginning in the year 2001 (i.e. 2006, 2011, etc.)."

This annual report describes activities conducted during 2005, and activities planned for 2006. The activities, procedures and schedules described in this report area based on the Wildlife Habitat Management Plan submitted to the Federal Energy Regulatory Commission on May 25, 1988.

The draft annual report was submitted to the U.S. Fish and Wildlife Service, the Washington Department of Fish and Wildlife and the Tulalip Tribes for comment. The U.S. Forest Service informed the co-licensees that they did not wish to participate in review of the 2006 annual report. The Washington Department of Natural Resources was also sent a copy. A meeting was held with agency representatives on March 17, 2006, to discuss progress to date and future activities. An attendance list and meeting minutes are attached to the annual report. No additional comments have been received from the agencies since the meeting; if comments are received after this submittal, they will be forwarded promptly to the Commission.

Please call Bernice Tannenbaum (425) 783-1746 or e-mail at <u>brtannenbaum@snopud.com</u>, if you have any questions on the 2005 annual report.

Sincerely,

Clair Olivers Assistant General Manager PUD Water Resources

Torn Thetford<sup>4</sup> Utilities Director City of Everett

## Enclosures

- cc: T. Romanski, U.S. Fish and Wildlife Service
  - D. Williams, Tulalip Tribes
  - R. Johnson, Washington Dept. of Fish & Wildlife
  - L. Bergvall, Washington Dept. of Natural Resources
  - E. Gaedeke, FERC, Portland

## 2005 ANNUAL PROGRESS REPORT

## WILDLIFE HABITAT MANAGEMENT PROGRAM

for the

## HENRY M. JACKSON HYDROELECTRIC PROJECT

## FEDERAL ENERGY REGULATORY COMMISSION Project Number 2157 - License Article 53

Submitted by

## PUBLIC UTILITY DISTRICT NO. 1 OF SNOHOMISH COUNTY

and

## THE CITY OF EVERETT, WASHINGTON

April 2006

#### 2005 ANNUAL PROGRESS REPORT WILDLIFE HABITAT MANAGEMENT PLAN

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#### 2005 ANNUAL PROGRESS REPORT WILDLIFE HABITAT MANAGEMENT PLAN

#### 1.0 SUMMARY

Accomplishments of the year 2005 on the Wildlife Habitat Management Plan (WHMP) for the Henry M. Jackson Hydroelectric Project are presented in this report. A cumulative summary of tasks accomplished since the initiation of the WHMP in 1988 is also presented in this report. Problems or changes needed during implementation of the WHMP are discussed, and updated schedules are presented. A draft of this report was submitted for comments to the U.S. Fish and Wildlife Service (USFWS), the Washington Department of Fish and Wildlife (WDW), and the Tulalip Tribes. The Washington Department of Natural Resources (DNR) was also consulted.

The basic habitat enhancements, monitoring programs, and reports required by the WHMP to date have been implemented consistent with the WHMP's objectives (Section 3, WHMP, by management tract) and implementation schedule (Section 5.0, WHMP). In some cases, procedures described in the WHMP have been modified or refined to improve the usefulness and reliability of results. Similarly, the details of timber stand boundaries and harvest schedules have been modified to improve operations and reduce impacts, but all such modifications have been within the allowances provided by the WHMP. All significant modifications in procedures have been evaluated relative to the WHMP's management objectives, in consultation with agency reviewers, and have been approved only if the modifications remain consistent with the WHMP's objectives.

As described in Sections 3 and 4 of this report and in previous years' reports, implementation of the WHMP over the past decade has already provided many of the intended wildlife habitat benefits. For example, snag and coarse woody debris creation has provided critical shelter and foraging substrate that was scarce in second growth forest stands, while small-scale timber harvest has created new foraging opportunities for several species. Revegetation of areas disturbed during project construction has provided cover and forage.

### 1.1 MAJOR TASKS ACCOMPLISHED DURING 2005

- Continued implementation of Lake Chaplain Tract RMAP (Lake Chaplain Tract)
- Complete harvest of Unit 3 of Phone Line Sale (Lake Chaplain Tract)
- Completed reforestation of Units 1 and 2 of Phone Line Sale (Lake Chaplain Tract)
- Completed Crazy Bear Sale layout (Lake Chaplain Tract)
- Monitored plantations (Lake Chaplain Tract)
- Continued implementation of Spada Lake Tract RMAP and associated road repairs
- Continued wetland descriptions/ratings on WHMP lands
- Management of noxious and invasive weeds (all WHMP tracts)
- Snag inventories (Lake Chaplain Tract)

- Monitoring of nest structures (Lake Chaplain, Lost Lake and Spada Lake Tracts)
- Biosolids application (Lake Chaplain Tract)
- Water quality monitoring in Chaplain Creek
- Deer forage monitoring in Chap1-91 and Line1-00 (Lake Chaplain Tract)
- Stakeholder meetings and completion and filing of Notice of Intent and Pre Application Document for relicensing under the FERC Integrated Relicensing Process (ILP).

## 1.2 TASKS SCHEDULED FOR 2006

- Continued implementation of RMAPs (Lake Chaplain, Spada Lake Tracts)
- Complete reforestation of Unit 3 of Phone Line Sale (Lake Chaplain Tract)
- Sell Crazy Bear Sale (Lake Chaplain Tract)
- Plantation monitoring (Lake Chaplain Tract)
- Monitor thinned stands on Spada Lake Tract
- Snag monitoring (all tracts)
- Monitor nest structures (all tracts)
- Monitor revegetation sites
- Management of noxious and invasive weeds (all WHMP tracts)
- Develop draft SOP to monitor and control noxious weeds (all tracts)
- Water quality monitoring of Chaplain Creek
- Deer forage monitoring (Lake Chaplain Tract)
- Monitor Williamson Creek Tract
- Continue wetland descriptions/rating on WHMP lands
- Follow formal ILP for relicensing

## 2.0 INTRODUCTION

The 2005 Annual Progress Report on the Wildlife Habitat Management Plan (WHMP) for the Henry M. Jackson Hydroelectric Project was prepared by Public Utility District No. 1 of Snohomish County (District) and the City of Everett (City), who are co-licensees in the Project. The WHMP project area and management tracts are shown in Figure 1.

The WHMP guides management of the five tracts of land totaling approximately 7,070 acres of land and water. Refer to the WHMP, Wildlife Habitat Management Plan Supplement for the Spada Lake Tract (January 1997), and the Pre-Application Document (PAD) for the Jackson Hydroelectric Project, Section 5.4 (December 2005) for details on management goals and objectives, schedules and updated information. These documents are available on the District's website at <a href="http://www.snopud.com/Water Resources/relicensing">http://www.snopud.com/Water Resources/relicensing</a>.

This annual report describes activities conducted during calendar year 2005 (see Section 3.0) and summarizes activities completed since the management program was initiated in 1988 (see Section 4.0). Activities anticipated for the calendar year 2006 are described (see Section 5.0). Activities, procedures and schedules described in this report are based on the WHMP approved by the Federal Energy Regulatory Commission on May 19, 1989, in compliance with Project License Article 53 and subsequent related orders from the Commission.



#### 3.0 WORK COMPLETED DURING 2005

#### 3.1 FOREST VEGETATION MANAGEMENT ON THE LAKE CHAPLAIN TRACT

#### 3.1.1 Phone Line Sale Harvest

Harvest of Unit 3 of the Phone Line Sale began in 2004 and was completed in 2005, for a total of approximately 18.3 acres (Figure 2). The landing area was re-seeded following the completion of harvest and clean-up in 2005. The access road right-of-way was seeded in 2004. Most of the yarding was completed on this unit with sufficient lift to avoid much disturbance to the ground, therefore minimal re-seeding on the unit was required.

Units 1 and 2 of the Phone Line Sale were completely harvested in 2004, and were planted in 2005 with a mixture of 300 Douglas fir and 50 western red cedar seedlings per acre (Figure 2).

#### 3.1.2 Sale Layout for Crazy Bear Sale

Layout of two units of the Crazy Bear Sale was completed in 2005 (Figure 2). This sale will consist of only these two units. Layout work for Unit 1 consisted of selecting snag and coarse woody debris trees (CWD), and marking selected hardwoods for retention; (other layout activities were completed in 2004). Unit 2 required marking of the sale boundary, a buffer zone boundary, GTA location, and selection of snags, CWD and hardwoods.

#### 3.1.3 Monitoring of Plantations

Existing plantations were monitored in 2005, and all were in satisfactory condition. Seedling survival plots in Phone Line units 1 and 2 had 90 percent or greater survival in the year following planting. Other units were checked for bear damage and density of competing hardwoods. Chap1-91, harvested in 1991, has had a lot of bear damage, and Chap3-91 has had light bear damage. Divr2-95 has had hardwoods (alder and cherry) slashed in previous years to reduce their density and competition with conifer seedlings following WHMP standards of 5 to 10 percent hardwoods, and more hardwoods may be cut down in the future in pockets where they overtop the conifers. Hors3-93 was treated previously with biosolids to correct nitrogen deficiency, and looked satisfactory following this treatment.



#### 3.2 FOREST VEGETATION MANAGEMENT ON THE SPADA LAKE TRACT

Forest stands on the Spada Lake Tract were reclassified/updated into vegetation cover types defined by the WHMP, with two additional cover types added, to reflect successional changes since the original typing was done in the late 1980's. Stands that were formerly classified as Early Successional, Closed-canopy Sapling/Pole Coniferous Forest, and Mixed deciduous/Coniferous forest were reclassified (Table 1).

The *Mosaic* cover type was added to describe most of the mixed conifer/deciduous stands on the Tract, which are actually mosaics of deciduous and conifer stands rather than uniform mixtures. The distinction recognizes that understory is usually found in patches with deciduous canopy but not in coniferdominated patches. Mosaic stands offer interspersion of cover and forage not found in uniformly-distributed mixed stands.

The *Rock* cover type was added to represent areas of rock outcrop and/or talus. Previously, these areas were identified as slides, or other vegetated cover types, but it is unlikely that much vegetation will ever develop on these sites.

COVER TYPE	CODE	1995	2004
Early Successional	ES	125.6	0.0
Open-Canopy Sapling/Pole Coniferous			
Forest	OS	21.0	18.9
Closed-Canopy Sapling/Pole Coniferous			
Forest	CS	883.8	311.7
Small Sawtimber Coniferous Forest	SS	24.7	612.1
Large Sawtimber Coniferous Forest	LS	3.8	11.9
Old Growth	OG	218.0	218.0
Mixed Deciduous/Coniferous Forest	MF	<b>528</b> .5	264.4
Mosaic Deciduous/Coniferous Forest	MO		348.8
Deciduous Forest	DF	55.5	60.9
Riparian Forest	RF	9.8	25.2
Mixed Shrub/Brush	SB	8.8	6.0
Grass/Meadow	GM	1.2	0.8
Wetland	WL	6.2	24.4
Non-Vegetated	NV	73.5	21.5
Slides	SL	12.0	3.1
Rock/Talus	RK		15.2
Open Water	OW	1691.7	1721.2
TOTAL		3664.1	3664.1

Table 1.	Cover Ty	pes and Acres within the Spada Lake Tra	ct
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Several stands were considered for silvicultural management, including 9-90, 9-133, 9-127, 9-149 and 9-144 (Figure 3). Small portions of stands 9-90 and 9-144 were considered for commercial thinning, and may be feasible if combined with a larger unit (9-48). Other portions of 9-90 and 9-133 would be better suited for precommercial thinning, but it was decided that the stands' canopy can be more efficiently managed through snag/gap creation (see Section 3.3) because the



Unofficial

area suitable for thinning is relatively small and there is considerable bear damage. Stands 9-127 and 9-149 will be revisited in five years.

#### 3.3 SNAG AND COARSE WOODY DEBRIS MANAGEMENT

Units inventoried for snag creation in 2005 are shown in Table 2, and in Figure 4. All units visited were on the Lake Chaplain Tract. A total of 243 acres comprised of 12 units were inventoried to determine snag needs. However, no snag creation occurred in 2005, due to difficulty in finding willing bidders for the snag contract.

#### AVG. AVG. # NUMBER DBH HT. PER UNIT ACRES CREATED (in.) (ft.) ACRE NOTES 2025-2 17.3 0 n/a n/a n/a All units inventoried in 2025-5 22.3 0 n∕a n/a n/a 2005; snag creation will occur in Spring 2006. 2025-6 15.9 0 n/a n/a n/a 2035-1 23.4 0 n/a n/a n/a 2035-2 0 5.0 n/a n/a n/a 2035-4 12.7 0 n/a n/a n/a 2035-5 20.0 0 n/a n/a n/a 2045-1 22.3 0 n/a n/a n/a 2045-2 27.3 0 n/a n/a n/a 2045-3 11.0 0 n/a n/a n/a 2045-4 20.0 0 n/a n/a n/a 2045-5 17.8 0 n/a n/a n/a 2045-6 27.6 0 n/a n/a n/a 242.6

### Table 2. Summary of Snag Management Activities in 2005

### 3.4 REVEGETATION AND WEED MANAGEMENT

#### 3.4.1 Lake Chapiain Tract

Three species of noxious weeds (buddleia, tansy ragwort and Scotch broom) were removed by hand-pulling along roadsides whenever they were observed. Problem areas include the north dam, south dam, an area near Portal 3 and the road to Portal 2. Weed removal will continue as part of routine road patrol on the Lake Chaplain Tract.

### 3.4.2 Pipeline ROW

Activity to control noxious weeds on the Pipeline ROW in 2005 consisted primarily of gathering location data and herbicide control. Scattered populations



of weeds encountered include tansy ragwort, several varieties of thistle, and Scotch broom. A state-licensed contract herbicide sprayer was used in those areas outside of the City of Sultan's watershed area.

Several areas were also re-seeded with a mixture of fescue and rye grasses and clovers after heavy equipment was used to dig down to the pipeline to check the integrity of the cathodic protection system. These areas had all germinated and were growing well heading in to the fall dormant period.

#### 3.4.3 Lost Lake Tract

Recreational visitors to Lost Lake requested that the District identify a plant that they thought might be a noxious weed. The plant that they appeared to question is a native wetland species, *Dulichium*.

#### 3.5 NEST STRUCTURES

#### 3.5.1 Floating Nest Platforms

Monitoring of the two floating nest platforms on the Spada Lake Tract (Figure 5) occurred while District biologists were performing other tasks. The platform in the Williamson Creek mouth was used for nesting by Canada Geese. Three egg membranes were found on the nest, and the adult pair was observed swimming nearby with one gosling.

Neither of the two platforms at Lost Lake (Figure 6) was used, but they were monitored more frequently due to ease of access.

#### 3.5.2 Nest Boxes

Nine nest boxes are in place around Lost Lake (Figure 6) and its associated wetlands. Only one was used in 2005, and two others were damaged by bears. In the one box that was used, 8 wood ducks fledged from a clutch of 9 eggs (Table 3).

On the Lake Chaplain Tract (Figure 7), 5 nest boxes were in place at Chaplain Marsh at the beginning of the nesting season, and all 5 were damaged to some extent by bears. Metal flashing had been installed immediately below one of the boxes in an attempt to determine its effectiveness at deterring such predation. The bear apparently climbed right over the 18" flashing, without even scratching it. Wider bands of flashing will be installed on future boxes, particularly in locations where bear predation has now become routine.

None of the 8 nest boxes in place at Spada Lake (Figure 5 and Figure 8) were used for nesting during the 2005 season, and none were damaged by bears.

Predation of nest boxes at Lake Chaplain and Lost Lake by black bears has increased in recent years, after being nearly non-existent until 2004. Literature review shows that ducks will not use a box that was depredated, and that boxes are typically attacked only when occupied. In several cases over the past two years, no nesting material (wood chips provided or down) was found to









conclusively indicate whether incubation had begun prior to the box being damaged or knocked down. However, in some cases down was found, indicating that incubation was likely underway, therefore, it is possible that adult females may have been killed along with any eggs in the nest. This would result in a loss of production for the current year, as well as the breeding female, and could potentially cause the local population to begin to decline. In the event that the female was able to escape, re-nesting is uncommon in this region. Immature females most often return to their natal site to breed the following year, thus exacerbating the population decline if nests are destroyed. Mature females typically scout out their nesting sites during the fall of the year prior to migration, and, since boxes are not repaired until winter, those that have been damaged or knocked down would not be seen as available to searching females, which may cause them to look elsewhere for nesting sites.

In an attempt to remedy this situation, and as mentioned previously, additional flashing will be placed below nest boxes, and repairs to damaged boxes will begin shortly after the nesting season has ended in mid-summer, to ensure that adequate nesting resources are available to searching females prior to their departure for the winter.

Location	Boxes Available	Boxes Used	Fledging Success (# of boxes that fledged 1 + egg)	Number fledged by species
Lost Lake Tract	9	1 (11%)	1 (11%)	8 of 9 wood ducks fledged from 1 box
Lake Chaplain Tract	5	0 (0%)	n/a	
Spada Lake Tract	8	0 (0%)	n/a	0
TOTAL	22	1 (4.5%)	1 (4.5%)	8 wood ducks

Table 3. Nest Box Use on JHP Lands in 2005

## 3.5.3 Osprey Nest Platforms

District staff monitored the osprey nest platform at Lost Lake (Figure 6) and the two platforms at Spada Lake (Figure 7) at least once a month from April through July. No use was noted during that time, so additional monitoring visits were not necessary.

## 3.5.4 Baid Eagle Nest

The bald eagle nest established in 1997 on the Lake Chaplain Tract was occupied by nesting bald eagles from April through August 2005. It appears that one chick was successfully fledged from the nest in early August 2005.

## 3.6 OTHER WILDLIFE OBSERVATIONS

Some incidental observations of wildlife species on WHMP lands are listed in this section. These observations are not the result of systematic surveys for wildlife, but are included in the report to document the presence of these species on management lands.

- Bald eagle in conifer east of South Fork boat launch 1/5/05
- Coyote on SL48 1/5/05
- Bufflehead male at Lost Lake 1/7/05
- Cottontail Rabbit on pipeline ROW 1/19/05
- Double-crested Cormorant on deadhead in Sultan R. below powerhouse 1/19/05
- Mallards (4 pairs) at Lost Lake 1/26/05
- Belted Kingfisher at Lost Lake 1/26/05
- Virginia Rail at Lost Lake 1/26/05
- Canada geese at Lost Lake 2/1/05
- Raven flying over Lost Lake 2/2/05
- Hooded Mergansers (3 males, 1 female/immature) at Lost Lake 2/8/05
- Western Grebe at Lost Lake 2/8/05
- Bald Eagle perched on fallen tree at Lake Chaplain 2/17/05
- Bobcat along shore of Lake Chaplain 3/3/05
- Wood duck pair calling at Lost Lake 3/4/05
- Heard two barred owls at Lost Lake 3/7/05
- Garter snake at Chaplain Marsh 3/11/05
- Bobcat in tree by Powerhouse 3/21/05
- Two bobcat kittens on S-1000 Rd., Lake Chaplain Tract
- Coyote, Diversion Dam Rd.
- Cougar, C-1000 Rd.
- Great Blue Heron at Lost Lake south end 4/6/05
- Tree swallows feeding at Lost Lake 4/6/05
- Western grebe on Spada Lake east of Culmback dam 4/9/05
- Bobcat, Bear Creek Recreation Site 4/9/05.
- Black bear near site 2 at Spada Lake 4/13/05
- Common Loons (3) diving off site 3 at Spada Lake 4/13/05
- Double-crested cormorant near site 4 at Spada Lake 4/13/05
- Common Loon near Lake Chaplain south dam 4/15/05
- Pied-billed grebes (3) foraging along west side of Lake Chaplain 4/15/05
- Hooded Merganser male, Bufflehead males (2) and Wood Duck male at Lost Lake 4/15/05
- Pileated Woodpecker calling from SE corner of Lost Lake Tract 4/21/05
- Green-winged Teal foraging at Lost Lake 4/21/05
- Barrow's Goldeneye pair sleeping on floating log across from Site 4 at Spada Lake 4/27/05
- Otter pair in log jam across lake from site 4 at Spada Lake 4/27/05
- Deer, two antierless, crossing road to Powerhouse 5/3/05
- Loon swimming in Williamson Creek mouth 5/31/05
- Baid eagle perched on snag at east end of Spada Lake 5/31/05
- Osprey pair flying over site 5 eastbound at Spada Lake 5/31/05

- Canada Geese (2 adults & 1 gosling) near mouth of Williamson Crk 5/31/05
- California quail along access road to Lost Lake 6/1/05
- Otter along west shore of Lake Chaplain 6/1/05
- Deer (2) with 5" velvet spikes along west shore of Lake Chaplain 6/1/05
- Coyote along powerhouse access road 6/7/05
- Black bear along powerhouse access road, foraging on freshly mowed ROW 6/7/05
- Great Blue Heron at Mouth of Williamson Creek 6/10/05
- Harlequin duck female with 6 ducklings 1.5 miles up Williamson Crk. 6/16/05
- Black bear along powerhouse access road 6/29/05
- Black-headed Grosbeak near P15 on pipeline ROW 6/29/05
- Common Loon inside log boom area at Spada Lake 6/29/05
- Black bear with cub on Lost Lake access road 7/12/05
- Otter (3) swimming in Chaplain Marsh 8/25/05
- Black bear on powerhouse access road 9/1/05
- Western grebe on west shore of Lake Chaplain 10/3/05
- Two bald eagles flying by Powerhouse 10/17/05
- Bald eagle flying over Sultan River near Powerhouse 11/15/05. Landed in tree on opposite side of river
- Cormorant flying out of Lost Lake area 11/18/05
- Bufflehead (3), Hooded Merganser (3) and Ring neck Duck (2) at Lost Lake 11/19/05
- Pied-billed grebe (5) at north end of Lake Chaplain 12/9/05
- White pelican, north end of Lake Chaplain
- Ruffed grouse at Powerhouse 4/28/05
- Pileated woodpecker, crossed Phone Line Unit 3, 9/8/05
- Black-tailed deer, Lake Chaplain units and roads
- Western tanager, Line Tree Unit 1, 6/28/05
- Band-tailed pigeons, Line Tree Unit 1, 6/28/05
- Anna's hummingbird, Line Tree Unit 1, 6/28/05

### 3.7 BIOSOLIDS APPLICATION AND MONITORING

In the summer of 2005 the City of Everett, through subcontractors, applied biosolids to three harvest units in the Lake Chaplain Tract. The application sites lie outside of the hydrographic boundary of the Lake Chaplain watershed and provide a forested buffer to the watershed. The biosolids were produced at the City's Water Pollution Control Facility and are the stabilized product of the wastewater treatment process. Biosolids contain numerous plant nutrients and soil conditioning organic matter, including nitrogen, sulfur, phosphorus and zinc. Biosolids produced at the City's facility conform to State and Federal standards for these products.

Biosolids were applied to three harvest units: Hors3-93, Divr1-95 and Line2-00 (Figure 9). Hors1-93, Hors2-93, Hors3-93 and Divr1-95 had previous biosolids applications in 1996 and 2000, as described in the Annual Reports for those years, and the re-application was intended to supply the full amount of nutrients indicated by earlier soil tests on these units. Biosolids were applied in 2005 in



Figure 10. Water Quality Monitoring 2004-5



semi-solid form (>40% solids) using a side discharge spreader. A total of 1,512 dry tons or 3,780 wet tons were applied during the period June 13 through August 5 as follows: Hors 3-93 - 850 wet tons, Divr1-95 - 1,015 wet tons, and Line2-00 - 1,915 wet tons.

The City of Everett monitored water quality in Chaplain Creek in relation to biosolids applications from August 1996 through December 2005. Figure 10 compares results from 2004, prior to biosolids application, with 2005 results. Results obtained in 2005 indicate the same patterns of seasonal variations for contaminants, all within the acceptable range, that have been found in previous years. These patterns were reported for fecal coliforms, nitrates and ammonia in the 2002 Annual Report, Section 3.10, and Figures 12-14). Chaplain Creek normally exhibits increases in fecal coliforms during the summer, and nitrates during the winter. The August spike in ammonia downstream from the biosolids application sites is within the normal range of variation for this contaminant in Chaplain Creek.

### 3.8 DEER FORAGE MONITORING

Deer forage availability was sampled in late June-early July on Chap1-91 and Line1-00 on the Lake Chaplain Tract (Figure 2). Fifteen years after harvest, Chap1-91 was dominated by Douglas fir >6ft, although various *Rubus* species, huckleberry, bracken fern and sword fern are present in the understory on most transects (Figures 11 and 12). Bear damage and mountain beaver burrows were widespread in the unit.

Line 1-00 was harvested in 2000, and was populated by early successional understory species such as sword fern and a variety of forbs (Figure 13). Both harvest units offer more deer forage after harvest than before, but in Chap1-91 some forage species appear to be dropping out probably due to shading by the conifer saplings.

### 3.9 LAND MANAGEMENT AT LAKE CHAPLAIN

The City of Everett continued implementation of its Road Maintenance and Abandonment Plan (RMAP) in the Lake Chaplain Tract. RMAP activities included brush cutting along roadsides and cleaning of culverts and ditches, as needed.

## 3.10 LAND MANAGEMENT ON DISTRICT PROPERTY

The District continued implementation of its RMAP, which includes the roads on the Spada Lake, Williamson Creek, Lost Lake and Project Facility Lands Tracts. Ditches, culverts and ROWs were inspected and maintained as needed. The District submitted the annual Road Maintenance and Abandonment Plan (RMAP) report to DNR as required, for roads on WHMP mitigation lands. Major road improvements and repairs were completed following detailed plans developed for stabilizing the road from Olney Pass to Culmback Dam. Improvements were approved by DNR regulatory staff.











The District continued to work with DNR and USFS representatives regarding DNR's proposal to abandon the South Shore Road, which leads to four of the District's Jackson Project Recreation Sites and wildlife mitigation lands. Issues that continue to be discussed include maintenance of the road through the current license period (through May 2011) and long term solutions and plans through the next licensing period.

#### 3.11 SECURITY MEASURES AT LAKE CHAPLAIN/JACKSON PROJECT FACILITIES

Restrictions on access to the Culmback Dam continued through 2005. The gate on Culmback Dam Road just west of the intersection of USFS road 6122 remains closed. Access for whitewater boaters downstream of Culmback Dam remains open via the USFS road 6122. The co-licensees filed an amendment with the FERC to permanently close Recreation Site 6 (the Culmback Dam Site).

The District installed security systems on the Culmback Dam Road in the vicinity of Culmback Dam in late 2005. These systems include motion-activated alarms, lights and cameras. Security staff worked with District wildlife biologists to minimize the potential impact of these systems on wildlife, such as aiming the lights and alarms and reducing the volume of alarms.

#### 3.12 JACKSON PROJECT RELICENSING

The Co-licensees for the Jackson Project filed a Notice of Intent and a Pre-Application Document (PAD) with FERC on 1 December 2005 under the new Integrated Licensing Process (ILP), thus starting the formal relicensing process. Several activities important to the informal relicensing process were conducted in 2005. The Relicensing Team worked with Meridian Environmental to prepare the PAD and conduct stakeholder meetings. Four more wetlands (in addition to the 6 wetlands evaluated in 2004) on WHMP mitigation lands were evaluated using Department of Ecology's Washington State Wetlands Rating System for Western Washington (Table 4).

The District's relicensing website is continually updated and provides the agencies and public with information about relicensing of the Jackson Project and displays many of the documents compiled over the past 20+ years of project history. Go to the external snopud website (www.snopud.com), Water Resources, and relicensing to view this site.

A project tour with FERC and agency representatives and with some nongovernmental organizations was conducted on October 17, 2005 as part of the formal relicensing process. This tour was conducted in lieu of a tour in February 2006 (part of the formal scoping process), to avoid potential weather related problems with viewing the Project area.

Table 4. V	Vetland Rating Form Summa	ry			
			Washington Wetle	and Rating System	Cowardin System
Wetland #	Name/Location	Wetland Size	Wetland Class	Functional Rating	Classification
		(ac.)			
1	South Shore Recreation Site Wetland (west of boat launch)	9.1	Lake fringe	111	lacustrine, littoral, aquatic bed (small portion) and emergent (majority of site), artificially flooded
2	Lost Lake Wetland, edge of lake	25.6	Bog/Depressional	 	palustrine moss-lichen, emergent and broad- leaved evergreen shrub/scrub, and palustrine forested needle-leaved (minor part of site), saturated
3	Lost Lake Tract, SW corner	7.4	Depressional		palustrine emergent persistent, and shrub- scrub broad-leaved deciduous, seasonally or semipermanently flooded
4	South Shore Road Wetland (Between Rec. Sites 3 & 4)	2.6	Riverine	1	palustrine emergent, shrub-scrub broad- leaved deciduous and evergreen, and needle- leaved forested, permanently flooded (beaver dam)
5	Chaplain Creek Marsh	47.2	Riverine	!   	palustrine aquatic bed, emergent persistent, and palustrine shrub-scrub broad-leaved deciduous, permanently flooded (beaver dam)
6	Williamson Creek Wetland 1, (east of road)	3.7	Depressional	11	palustrine emergent, deciduous shrub-scrub, seasonally flooded, seasonally flowing stream
7	Williamson Creek arm, South Wetland	4.7	Lake fringe	111	lacustrine littoral, aquatic bed (varies with lake level), emergent, broad-leaved decuduous shrub-scrub, artifically flooded
_8	North Fork Arm Wetland	6.8	Lake fringe	111	iacustrine littoral, aquatic bed (varies with lake level), emergent, broad-leaved decuduous shrub-scrub, broad-leaved decidous forested, artifically flooded

			Weshington Wetla	ind Rating System	Cowardin Svatem
Wetland #	Name/Location	Wetland Size	Wetland Class	Functional Rating	Classification
	Upper South Shore Recreation				palustrine emergent, broad-leaved deciduous shrub-scrub, permanent and
Ō	Site Wetland	2.9	Riverine		seasonally flooded (beaver dam)
					palustrine aquatic bed, emergent, broad- leaved deciduous shrub-scrub,
10	North Shore Wetland	3.1	Riverine	=	permanently and seasonally flooded (beaver dam)
<b>BOLD</b> type	indicates wetlands studied in 2005				

#### 3.13 AGENCY CONSULTATION

A meeting regarding implementation of the WHMP was held with agency representatives on March 17, 2006. We will be addressing concerns expressed at this meeting, as detailed in Appendix 1 – Agency Meeting Minutes.

#### 4.0 CUMULATIVE SUMMARY

Section 4.0 provides a cumulative summary of WHMP related activities conducted since the beginning of implementation through 2005.

#### 4.1 FOREST VEGETATION MANAGEMENT (LAKE CHAPLAIN TRACT)

#### 4.1.1 Road System Layout and Construction

The main road systems for the northeast side of the Tract, the area south of the Diversion Dam Road, and portions of the west side of the tract have been constructed, as shown in Figure 2. Spur roads were constructed to provide access to individual units as needed for harvest. The RMAP for the Lake Chaplain Tract was completed in 2002, and implementation is underway.

#### 4.1.2 Timber Harvest

Harvest activity and sale layout to date are depicted in Figure 2, which also shows reconfiguration of future harvest units on the west side of Lake Chaplain. All of the harvest unit boundaries have been reconfigured at the time of sale layout relative to the diagram in the WHMP to improve operation feasibility, reduce impacts to streams and wetlands, and reduce the length of access roads. Figure 2 shows these changes and also some changes in unit boundaries that are planned to solve these potential problems when units are set up in the future. It is expected that additional relatively minor changes will be made during sale layout in the future, but the boundaries shown in the figure are a reasonable depiction of future units. As part of the process, boundaries of permanent mixed forest stands, stream and wetland buffer zones, and old growth management areas have been established and many of them have been marked with boundary tags. Although boundaries have shifted somewhat, the WHMP's target acreage for these permanent forested stands has not changed significantly.

There have been some substitutions of final harvest units, as summarized below in Table 5. However, the final harvest program complies with the WHMP's schedule to date, as well as requirements such as the restriction on harvest unit size. To date, a total of 16 units (approximately 327 acres) have been harvested. The WHMP's 15-year green-up period between adjacent harvest units has been followed within the Tract, but some units adjacent to clear cuts on State land did not allow the full 15-years. The WHMP allows some flexibility in scheduling harvests (i.e. harvest may occur 5 years before or after the target year) on the Lake Chaplain Tract, and the co-licensees attempt to provide as much green-up time as possible within the WHMP's schedule. Commercial thinning schedule in the WHMP from 1990 to 2005 was modified for several reasons, including potential problems related to access, soil type and timber type. These issues were discussed more fully in the 1996 Annual Report (Section 4.1.3). After on-site evaluation, it was determined that several units would be eliminated from the commercial thinning schedule. The units, and the reasons for not thinning them, are listed in Table 6. Two units (38 acres) that were not scheduled in the WHMP were thinned in 1993 (Table 6).

Table 5. Modifications	for the Final Harve	st (FH) Schedule on Lake Chaplain Tract
Unit Name	Scheduled FH	Reasons for Modification
2005-5 ("Gold Camp" unit)	1990	Existing wildlife habitat value is high. Unit Divr2-95 (portions of units originally scheduled for FH in 2005 and 2030) was harvested instead of 2005-5 in 1995
2030-3	2005 (part) and 2030 (part)	Units originally scheduled for FH in 2005 and 2030 reconfigured into Divr2-95 and 2030-3
Phon1	2000-3 (part) and 2035-2 (part)	Portions of units originally scheduled for FH in 2000 and 2035 reconfigured into Phon1
Phon2	2005-3 (part) and 2035-2 (part)	Portions of units originally scheduled for FH in 2005 and 2035 reconfigured into Phon2 (see Section 3.1.3 of this annual report for details.

Table 6. Modi Chaplain Trac	fications of the Com t	mercial Thinning (CT) Schedule on Lake
Unit	Scheduled CT	Reasons for Modification
2010-1	1990	Wet soil; timber type (hemlock) not suited to CT
2010-2	1990	Wet soil; timber type (hemlock) not suited to CT
2015-2	1995	Wet soil
2020-1	1990	Wet soil
2030-2	2005	Steep slope
2030-3	1990	High potential for blowdown; no benefit expected from CT
Hors1-93*	Not scheduled	Opportunity to improve understory vegetation; CT operationally feasible; FH scheduled in 2040
Hors2-93*	Not scheduled	Opportunity to improve understory vegetation; CT operationally feasible; FH scheduled in 2035

## 4.1.3 Management of Roads and Post-Harvest Units

All final harvest units at Lake Chaplain were seeded with a grass/forb mix on bare areas, and planted with Douglas fir and red cedar seedlings. Road ROW's were also seeded, and access roads outside the closed watershed have been gated to prevent vehicular access by the public.

Seedling survival plots have been established in all harvested units after planting, and the results are monitored for at least two years. One unit, Tiki198, was replanted one year after initial replanting due to excessive mountain beaver damage.

Small timber salvage sales were held associated with final harvest of some units:

- 1) adjacent to a 1991 harvest unit following a major storm in January 1993 and,
- 2) adjacent to two 1998 harvest units and access roads in 1998 and 1999.

Other timber salvage work took place in 2004 following severe winter storms that caused blowdown described in Section 3.1.4.

Monitoring of stocking levels in post-harvest units was started in 1997. Results that year in unit Chap2-91 showed excessive conifers, adequate overall density of hardwoods, but distribution of hardwood species was clumped. In 1998 some hardwood removal and replanting was done in this harvest unit. In 2001 some hardwood removal was done in Divr2-95, and Chap1-91 was precommercially thinned. Chap3-91 was precommercially thinned in 2002 and Chap2-91 was precommercially thinned in 2004.

### 4.2 FOREST VEGETATION MANAGEMENT (LOST LAKE TRACT)

Stand 7-4 (approximately 40 acres) was precommercially thinned in 1991 and monitored annually through 2000. The slash has begun to decompose, and access through the stand has gradually improved over time. The shrub layer, especially salmonberry, has responded to the reduction in the tree canopy, and signs of deer browsing have been observed.

A feasibility study of timber harvest on the Lost Lake Tract was performed by a consultant in 2000; results were summarized in Section 3.1 of the 2000 Annual Report. A detailed timber cruise of the older stands (7-1, 7-1, 7-3) was performed in 2001, and several management options were prepared. The decision was made in 2002, in consultation with the wildlife agencies, not to harvest these stands, as described in Section 3.3 of the 2002 Annual Report.

### 4.3 FOREST MANAGEMENT (SPADA LAKE TRACT)

#### 4.3.1 Management Plan

The Spada Supplement, a plan for approximately 1,745 acres of land surrounding Spada Lake that were acquired in 1991, was approved by the FERC in 1997. The Spada Supplement calls for commercial and precommercial thinning of some forest stands on the Tract. The Supplement originally called for thinning treatments on as much as 600 acres, depending on feasibility, during the period 1996-2005. After the Supplement was approved, however, the DNR completed abandonment of the North Shore Road and its tributary roads from a point east of Recreation Site 8 during the summer 1999 (Figure 14). The road had become inaccessible east of Recreation Site 8 due to a massive landslide in 1997, and the DNR chose to perform the work needed to properly abandon the road, and not to maintain it for vehicular use. Therefore, some of the planned



forest management activities, including commercial thinning and precommercial thinning, in units formerly served by this road were affected. With the loss of road access, the only option for future commercial harvest north of the lake will be helicopter logging.

#### 4.3.2 Silvicultural Treatment

Three young second growth stands (totaling about 30 acres) on the south shore of Spada Lake were precommercially thinned in September 1996. Two second growth stands totaling about 38 acres on the south fork were precommercially thinned in 2000 and two stands totaling about 38 acres in the northeast corner of the property were precommercially thinned in 2002 (Figure 14).

#### 4.3.3 Timber Harvest

A forestry contractor performed a feasibility study of timber harvest on second growth stands at the Spada Lake Tract that can be accessed by road (see Section 3.1.5 of the 2000 Annual Report). Eight stands were set up for commercial thinning, and Forest Practices applications were approved by the DNR in 2002. Harvest unit boundaries were modified in 2003, following a detailed timber cruise and cost/benefit analysis, and areas requiring road reconstruction and new construction were eliminated from the plan. The modified units (approximately 104 acres) were sold in 2003. Logging began adjacent to unit 9-135 in October 2003 and was completed on the remaining units in May 2004 (Figure 3, Figure 14).

#### 4.4 SNAG MANAGEMENT

Snag management conducted over the past 16 years on the Lost Lake and Lake Chaplain Tracts is shown on Figure 15 and in Table 7. Snag management has occurred on a total of 72 units (1,503 acres), with 2,266 snags created to date. Of these 72 units, 59 (1,280 acres) meet the requirements of the WHMP for snag size distribution and numbers per acre. The remaining 13 units will have snag creation occurring in 2006.

Snag creation did not occur on the Spada Lake or Williamson Creek Tracts in 2005. Figures 16 & 17 and Table 8 and 9, respectively, show snag management to date on these tracts. A total of 28 stands (842 acres) have had snag creation occurring to date, with 818 snags created. Of this total, 17 stands (576 acres) meet WHMP requirements for snag size distribution and number per acre. Of the remaining 11 units, 5 will have snag creation occurring in 2006, with several of the remaining units being allowed to grow another 10 years prior to re-visiting them to determine the need for snag creation and adequacy of existing tree diameters at that time.

Table 7. Summary of Snag Management Through 2005 - Lake Chaplain & Lost Lake Tracts						
UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACR E	NOTES
2025-2	17.3	0	n/a	n/a	n/a	Creation to occur Spring 2006
2025-5	22.3	0	n/a	n/a	n/a	Creation to occur Spring 2006
2025-6	15.9	0	n/a	n/a	n/a	Creation to occur Spring 2006
2035-1	23.4	0	n/a	n/a	n/a	Creation to occur Spring 2006
2035-2	5.0	0	n/a	n/a	n/a	Creation to occur Spring 2006
2035-4	12.7	0	n/a	n/a	n/a	Creation to occur Spring 2006
2035-5	20.0	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-1	22.3	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-2	27.3	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-3	11.0	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-4	20.0	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-5	17.8	0	n/a	n/a	n/a	Creation to occur Spring 2006
2045-6	27.6	0	n/a	n/a	n/a	Creation to occur Spring 2006
2015-1	12.2	15	16.1	66.5	4.5	√ Includes natural and created snags
2015-3	18.0	13	16.9	48.4	7.4	√ Includes natural and created snags
2015-4	18.8	0	20.6	46.1	4.7	√ Includes natural snags only
2015-5	17.7	26	16.0	44.1	5.4	√ Includes natural and created snags
2015-6	19.0	45	17.5	55.4	4.0	√ Includes natural and created snags
2020-1	24.0	50	16.9	61.9	4.9	√ Includes natural and created snags
2020-4	15.3	36	17.0	49.3	4.4	√ Includes created snags only
2020-5	19.1	15	19.1	61.4	9.8	√ Includes natural and created snags
2020-6	12.0	26	17.7	50.5	6.3	√ Includes created snags only
2025-1	28.0	24	16.5	65.4	4.1	√ Includes natural and created snags
2025-3	31.7	86	17.4	65.0	3.9	√ Includes natural and created snags

Table 7 continued. Summary of Snag Management Through 2005 - Lake Chaplain & Lost Lake Tracts						
UNIT	ACRES	NUMBER CREATED	AVG. DBH	AVG. HT. (ft.)	# PER	NOTES
			()		E	
2025-4	26.0	49	17.0	66.9	4.2	√ Includes natural and created snags
2030-2	22.1	60	17.0	50.3	3.1	√ Includes natural and created snags
2030-3	21.0	0	17.2	70.8	6.8	√ Includes natural snags only
2030-5	24.0	48	18.0	50.0	3.2	√ Includes natural and created snags
2035-3	18.5	30	18.0	55.0	4.9	√ Includes natural and created snags
2040-3	16.3	14	21.4	50.0	6.9	√ Includes natural and created snags
2045-6	14.0	15	17.8	70.1	3.8	√ Includes natural and created snags
Buffer Zone 1	2.3	15	16.4	63.8	9.8	√ Includes natural and created snags
Buffer Zone 2	1.4	7	15.9	46.6	5.0	√ Includes natural and created snags
Buffer Zone 3	8.7	23	16.6	46.6	4.5	√ Includes natural and created snags
OMA 10	8.6	4	20.0	56.3	18.4	√ Includes natural and created snags
OMA 3	11.8	27	16.2	63.6	6.3	√ Includes natural and created snags
OMA 4	26.5	22	16.1	54.5	6.7	√ Includes natural and created snags
OMA 8	5.3	7	18.1	54.3	18.4	√ Includes natural and created snags
OMA1a	74.8	14	17.9	68.3	4.3	√ Includes natural and created snags
OMA1b	50.5	62	18.4	65.2	3.2	√ Includes natural and created snags
OMA1c	30.7	68	18.1	64.4	4.0	√ Includes natural and created snags
PMF 10	34.1	56	18.3	45.1	4.5	√ Includes natural and created snags
PMF 11	12.0	25	16.8	43.7	4.3	√ Includes natural and created snags
PMF 15	6.8	0	14.4	35.0	10.6	√ Includes natural and created snags
PMF 17	14.7	35	17.0	58.1	4.4	√ Includes natural and created snags
PMF 4	31.8	54	16.5	46.2	4.9	√ Includes created snags only
PMF 5	27.4	0	23.5	47.3	5.3	√ Includes natural snags only
PMF 6	13.3	0	23.9	64.3	6.0	√ Includes natural snags only

Table 7 continued. Summary of Snag Management Through 2005 - Lake Chaplain & Lost Lake Tracts						Lake Chaplain & Lost Lake Tracts
UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACR F	NOTES
PMF 7a <sup>11</sup>	15.5	20	17.8	58.5	2.5	√ Includes natural and created space
PMF 7b	15.8	38	18.1	66.0	4.6	√ Includes natural and created spags
PMF 8	8.5	24	17.5	65.2	3.2	✓ Includes natural and created snags
PMF 9	52.2	71	17.3	54.9	3.1	✓ Includes natural and created snags
Stand 1-3 <sup>v</sup>	4.4	0	n/a	n/a	3.1+	√ Natural snags only
TIKI 1-98	21.0	54	17.5	55.6	3.1	√ Includes natural and created snaos
TIKI 2-98	23.8	73	18.0	56.1	3.1	✓ Includes natural and created snags
Wetland Buffer	8.7	12	19.0	47.9	1.4	Includes created snags only
Wetland Buffer 2	35.5	65	17.2	56.4	3.1	$\checkmark$ Includes natural and created snags
CHAP1-91	26.0	75	16.6	33.5	3.1	√ Includes natural and created snags
CHAP2-91	15.0	46	16.1	27.4	3.1	√ Includes created snags only
CHAP3-91	24.0	55	18.0	31.0	3.6	✓ Includes natural and created snags
DIVR1-95	15.6	42	16.8	50.3	3.1	√ Includes natural and created snags
DIVR2-95	19.7	59	18.3	47.9	3.1	✓ Includes natural and created snags
DONK 1-01	23.5	67	17.1	65.3	3.1	✓ Includes natural and created snags
DONK 2-01	21.4	58	18.0	67.6	3.0	√ Includes natural and created snags
HORS1-93	20.0	0	14.5	89.0	11.5	√ Includes natural snags only
HORS2-93	18.0	23	16.9	55.2	4.6	$\sqrt{1}$ Includes natural and created snags
HORS3-93	13.7	37	16.0	33.8	3.1	$\sqrt{1}$ Includes natural and created snags
LINE 1-00	14.8	42	18.0	65.4	3.0	$\sqrt{1}$ Includes natural and created snags
LINE 2-00	22.0	62	17.4	66.4	3.1	$\sqrt{1}$ Includes natural and created snags
Phone Line - 3	19.0	58	16.5	66.6	3.1	√ Includes natural and created snags

Table 7 continued. Summary of Snag Management Through 2005 - Lake Chapiain & Lost Lake Tracts							
UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACR E	NOTES	
TOTALS	1148	1940	Totals for th	ne 56 Lake (	Chaplain	units which meet WHMP reqs.	
	1371	1952	Totals for a	II 69 Lk Cha	plain un	its having snag mgmt activity to date.	
LOST LAKE TR	ACT						
Lost Lake 7-1	93.7	234	18.1	62.2	3.3	√ Includes natural and created snags	
Lost Lake 7-2	34.0	80	17.3	61.7	3.2	√ Includes natural and created snags	
Lost Lake 7-3	4.0	0	n/a n/a 3.1+ V Natural snags only				
TOTALS	132	314	Totals for all 3 Lost Lake units having snag management activity to date, all of which meet WHMP requirements for snags.				
BOLD denotes t occurred in 200 √ Meets WHMP t \1 Fewer than 3.07 s wetland area. Unit w	hose units 5 requirement mags/acre existent dil be revisited	where snag	manageme s distributio r snags than r	ent activity	ber per created o	ACTO. due to lack of overstory trees in this forested unted as meeting WHMP requirements.	
V2 Remainder of star	nd exclusive (	of already delines	ted units.		r		

Table 8. Summary of Snag Management Through 2005 - Spada Lake Tract						
				[		
UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
SPADA LAKE TRAC	<u>л</u>					
Stand 9-90	31.8	0	n/a	n/a	n/a	walk thru exam; schedule for CT/PCT in 2005, then revisit for snag/gap potential in 2006
Stand 9-107	28.5	0	n/a	n/a	n/a	snag/gap creation to occur in 2005
Stand 9-110	8.4	0	0.0	0.0	0.0	Natural snags only. Inventoried, snag/gap creation to occur in 2005
Stand 9-120	41.0	146	13.9	59.8	4.2	√ Includes natural and created snags
Stand 9-121/183	54.0	169	13.7	60.1	4.1	√ includes natural and created snags
Stand 9-135/ 140/141/145/148	41.0	n/a	n/a	n/a	n/a	Natural snags only. Inventoried, snag/gap creation to occur in 2005
Stand 9-151/ 152/154/155	27.8	n/a	_ n/a	n/a	n/a	Natural snags only. Inventoried, snag/gap creation to occur in 2005
Stand 9-184	11.0	n/a	n/a	n/a	n/a	walk thru exam; waiting 1 year after CT for blowdown, snag/gap creation to occur in 2005
Stand 9-8	106.0	326	15.2	60.5	3.3	√ Includes natural and created snags
Stand 9-24 11	12.1	<u>19</u>	15.7	62.0	2.1	Includes natural and created snags
Stand 9-35	4.5	13	15.9	54.9	3.9	√ Includes natural and created snags
Stand 9-47	4.3	10	15.7	64.0	3.0	√ Includes natural and created snags
Stand 9-114 11	53.0	0	_n/a	n/a	n/a	Re-visit in 10 years
Stand 9-125 11	33.0	0	n/a	n/a	n/a	Re-visit in 10 years

Table 8. Summar	y of Snag	Managemen	t Throug	gh 2005	- Spadi	Lake Tract
Stand 9-126 <sup>11</sup>	23.7	0	16.3	44.5	0.4	Natural snags only, re-visit in 10 years
Stand 9-173	20.5	0	34.9	58.8	5.8	V Natural snags only
Stand 9-180	7.4	14	21.4	65.0	4.2	V Includes natural and created snags
LOTALS	238	678	Totals for requirem	or those 7 nents.	r stands/c	omplexes which meets WHMP
	508	697	Totals fo	or all 17 s	tands/cor	nplexes having snag mgmt activity to date.

.

Table 9. Summary	y of Snag	Managemen	It Throu	gh 2005	- Willia	amson Creek Tract
Stand 10-1 <sup>v2</sup>	21.2	68	16.4	57.1	3.2	V Created snags only
Stand 10-2 <sup>VI</sup>	4.2	0	15.1	12.0	1.3	Natural snags only
Stand 10-3	18.7	28	19.3	32.9	3.0	V Includes natural and created snags
Stand 10-4	7.5	13	16.8	40.1	3.5	V Includes natural and created snags
Stand 10-5	15.1	12	22.7	37.0	3.5	V Includes natural and created snads
Stand 10-6	133.4	0	31.3	34.6	12.3	V Natural snags only
Stand 10-7	68.8	0	29.3	38.5	11.1	V Natural snags only
Stand 10-8	8.5	0	31.0	43.8	9.0	V Natural snags only
Stand 10-9	3.7	0	24.2	45.0	9.5	V Natural snags only
Stand 10-11	50.5	0	32.3	46.0	6.0	V Natural snags only
Stand 10-12	6.3	0	30.7	38.3	6.0	V Natural snags only
TOTALS	334	121	Totals fo	or those 1	10 units v	which meets WHMP requirements.
	338	121	Totals fo	or all 11 L	inits havi	ng snag management activity to date.
<b>BOLD denotes thc</b>	see units	where snag	manage	ment ac	tivity o	ccurred in 2005
V Meets WHMP req	Juirements	for size clas	s distribu	ution and	1 numbe	r per acre.
11 Trees not of adequal	te size for sr	iag creation, re-	evaluate ir	1 10 years		

2 No natural snags found during inventory.

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#### 4.5 COARSE WOODY DEBRIS MANAGEMENT

The 1995 Annual Report described the first inventories of CWD on the Lake Chaplain Tract, and the subsequent development of the CWD management procedure to ensure compliance with WHMP targets. The procedure was implemented on the 1995 Diversion Sale and the 1998 Tiki Sale. The 1995 and 1996 Annual Reports describe more fully the earlier inventories and consultations with the agencies regarding standards for compliance. In 1996, the inventory/monitoring methods were revised following a consultant's review of the procedures, as described in the 1996 Annual Report. The methods were finalized in 1997; field tested, and implemented on the units of the 1998 Tiki Sale, the Linetree Sale, and all subsequent harvest units. CWD management procedures specific to the Williamson Creek Tract were developed in 1999. Created CWD on two units of the 1995 Diversion Sale was monitored in 1999 per the CWD management methods. Table 10 lists CWD logs created on harvest units from 1995 to date.

#### 4.6 **REVEGETATION**

#### 4.6.1 Spada Lake Drawdown Zone

Test plots of five wetland emergent species were planted at two sites in October/November 1994 and monitored annually through 2000. Two sedge species became well established and spread vegetatively at Williamson Creek. Most plantings at the North Fork Sultan river site were damaged by wave action and floating debris.

Slough sedge (*Carex obnupta*) recruitment on the sites may be the result of the 1994 plantings since most of these plants are in or among the planted rows (1998 Annual Report, Section 3.4.1). However, natural in-seeding of wetland plants on both sites, especially small fruited bulrush and other herbaceous species, has been far more successful in covering the ground than the test plantings so far. The 1997 Annual Report (Section 4.6.1) describes the response of wetland plantings and natural recruitment on these sites with respect to the management of lake elevation. Subsequent monitoring visits (1999 and 2002) document the condition of the planting sites.

Table 10. Summary of Created CWD on Lake Chaplain Harvest Units							
UNIT	ACRES	NUMBER LOGS CREATED	# LIVE TREES	# SNAGS AND EXISTING LOGS	AVG. DIAMETER OF TREE	# LOGS/ACRE	
Divr1-95	15.6	120	34 Douglas fir	0	25.4	7.7	
Divr2-95	19.7	160	30 Douglas fir	18 Douglas fir	23.7	8	
Tiki1-98	21	166	32 Douglas fir	5 Douglas fir, 2 Hemlock	29.9	7.9	
Tiki2-98	23.8	189	42 Douglas fir	5 Douglas fir, 9 Hemlock	27.9	7.9	
Line1-00	14.8	124	29 Douglas fir	5 Douglas fir, 1 Hemlock	26	8.4	
Line2-00	22	176	44 Douglas fir	3 Hemlock	25.3	8	
Donk1- 02	23.5	190	42 Douglas fir	9 Douglas fir, 11 Hemlock	24.2	8.1	
Donk2- 02	14.3	115	22 Douglas fir, 3 Cedar, 4 Hemlock	2 Hemlock	26.4	8	
Donk3- 02	7.1	61	13 Douglas fir	1 Douglas fir, 1 Hemlock	25.4	8.6	
Phon1- 04	10.5	21	•	19 Hemlock, 2 Cedar	17	tbd**	
Phon2- 04	18.1	30	•	30 Hemlock	18	tbd**	
Phon3- 05	18.3	153	33 Douglas fir	9 Douglas fir, 6 Hemlock	24.2	8.4	
Sum	193.1	1505	327		······································		
* Snags a p.4 ** See pro	ind CWD we	ere not created in Ph ote and discussion i	ion1-04 and Phon n 2002 Annual Re	2-04, as described in port. Edge of unit an	the 2002 Annual Report	t, Sec.3.1.3,	
logs/acre.					• • • • • • • • •		

#### 4.6.2 Power Pipeline ROW

The pipeline ROW has been mowed on an annual basis to reduce the prevalence of tree seedling, as well as to allow for visual inspection when necessary. Work to reduce ORV disturbance has occurred occasionally, including boulder and log placement along streams. Intrusion by ORVs still occurs intermittently, particularly during DNR logging operations, when gates are left open during the day.

Noxious weed control has stepped to the forefront of ROW management, and several techniques for control and eradication have been used; hand pulling of small infestations, repeated mowing/cutting during the growing cycle, and more recently, herbicide application. Weed infestations have been mapped and recorded for several years, for inclusion into the GIS database.

#### 4.6.3 Lake Chaplain Tract

The required plantings at the north end of Lake Chaplain were monitored twice annually from the time of planting in 1992 through 1995, and once in the following years. Survival of western red cedar at the north end of the lake from the time of planting to 1998 was 80 percent. Douglas fir saplings have had excellent growth, with overall survival over 90 percent. Excess alders were removed in 1998 and 2001 to release planted conifers and delay conversion of grass/shrub habitat to hardwood thickets. The area was reseeded in 2001 following alder removal.

Species planted in 1993 adjacent to Chaplain Marsh included western red cedar, English holly, huckleberry, serviceberry, red-osier dogwood, nootka rose and redflowering current. Many volunteer shrubs have grown on the margin of the marsh as well, including Pacific willow, western hemlock, Douglas fir, big-leaf maple, twinberry, spirea, salmonberry, thimbleberry, vine maple and trailing blackberry. The required plantings were monitored twice annually from the time of planting in 1993 through 1995, and once in the following years. Alders growing among the plantings were cut down in 1998 to release the planted shrubs from competition. As a result, the density of the vegetative screen between the Lake Chaplain Road and the marsh decreased temporarily, but the desired species composition was retained.

#### 4.6.4 Powerhouse Site

Shrub and tree plantings were monitored at least twice each growing season between planting in 1993 and 1995, and once annually from 1996-1998. In 1997, we planted 5 cascara saplings and in 2003 we planted Oregon grape to test whether these species are suitable for the site. As of 2003, only one of the cascara saplings survived. Survival of the tree species has been greater than 90 percent, with variable growth: crabapples have performed better than ash and hawthorn. Of the shrubs, only Nootka rose has survived and grown well on this site. Some huckleberries and serviceberries have persisted, but have grown very slowly. Volunteer species that have done well on this site include nonnative Buddleia sp. and native thimbleberry, red alder and salmonberry.

## 4.7 NEST STRUCTURES

Figures 5 through 8 of this report show locations of nest structures in existence in 2005, including several that were newly-placed this year. Locations of nest structures that have been damaged, destroyed or relocated are also shown in these figures.

### 4.7.1 Required Nest Structures

All of the nest structures that were required by the WHMP have been installed and monitored annually thereafter. In 1990, two floating nest platforms and two duck nest boxes were installed at Lost Lake. One osprey platform was installed at Lost Lake in 1990 and two at Spada Lake in 1992.

### 4.7.2 Floating Nest Platforms

The floating nest platforms have been used primarily for resting areas for waterfowl, and feeding platforms for otter. Only a few instances of nesting or nesting attempts have been noted since they were originally installed in the early nineties.

### 4.7.3 Nest Boxes

Over the past 15 years since WHMP implementation began, numerous nest boxes have been removed, typically due to the mount tree dying and becoming unstable for the nest box, to discourage starling use, or more recently, bear predation. New boxes are added when an existing box is removed or damaged. Nest boxes are typically located in such a way as to minimize the potential for conspecifics to observe a nesting female enter her nest box, in an attempt to avoid nest dumping. This year's nest use (# of boxes used vs. # available) was the lowest to date, at 4.5%. Previously, nest use had fluctuated from a low of 14% in 1999 to a high of 53% in 1995, with an overall average of 34%. Additionally, this data includes eight Spada Lake boxes, which go unused nearly every year, thereby reducing the average use.

### 4.7.4 Osprey Nest Platforms

The Osprey nest platform at Lost Lake has produced two fledglings in two separate years, with a total of 5 or 6 years of nesting attempts. In 1999 the osprey appeared to select a site on DNR property south of the Lost Lake Tract as their primary nest site. They have used the original Lost Lake platform only one year since vacating it, but that attempt was not successful. The two osprey platforms installed at Spada Lake have never successfully produced fledglings. The platform near the South Fork Sultan River was partially built up in 1994, and adult were observed setting on the nest early in the 1995 nesting season, but apparently the nesting attempt failed. In 1996, a natural nest was constructed in the Sultan River gorge about a quarter mile downstream of Culmback dam. That nest was used for 3 years, when the top of the snag broke, resulting in the osprey constructing another nest on the same hillside in 1999. This nest site has been only casually observed, since it is not on project lands, and is not easily viewed, therefore, results are uncertain.

## 4.7.5 Baid Eagle Nest

The natural bald eagle nest constructed along the east shore of Lake Chaplain in 1996 has fledged at least 10 eaglets since initiation. In conjunction with the Washington Department of Fish and Wildlife, the City of Everett created a nest site management plan that restricts timber harvest within 800' of the nest site from February 1 through August 15.

## 4.8 BIOSOLIDS APPLICATION

The City of Everett applied 12.5 dry tons of biosolids per acre to units Hors2-93 (2035-6) and Hors1-93 (2040-5) in the Lake Chaplain Tract in August and September 1996, as described fully in the 1996 Annual Report, Section 3.8. This application was one half of the prescribed amount of biosolids (based on measured nitrogen requirements). In the summer of 2000, the City applied a blended soil amendment consisting of 2 parts biosolids and 1 part wood ash to units Hors1-93, Hors2-93, Hors3-93, and Divr1-95. Units Hors1-93 and Hors2-93 received 37.5 dry tons per acre of soil amendment, and units Hors3-93 and Divr1-95 received 45 dry tons per acre. Additional biosolids were applied to Hors3-93 and Divr1-95 in 2005 to complete the prescribed amount, and also to Line2-00.

Two water quality monitoring sites were established on Chaplain Creek. Creek waters were sampled monthly beginning in August 1996 through the end of 2001, and at least quarterly afterward. Parameters examined were nitrates, phosphorus, fecal coliform, ammonia, and chloride. Water quality monitoring has indicated no deleterious biosolids effect on the water quality parameters measured.

Vegetation monitoring was conducted from 1996 to 1999 and again in 2001 in accordance with the vegetation monitoring plan described in the 1996 Annual Report. No vegetation monitoring was conducted in 2000 because biosolids application at the sample sites disturbed the vegetation. No monitoring has been conducted since then.

## 4.9 DEER FORAGE MONITORING

A revised sampling procedure was finalized in 1997, after several other procedures proved unsatisfactory in previous years. The 1997 procedure has been used in monitoring Lake Chaplain Tract harvest units, as listed in the 2004 Annual Report, Table 9.

### 4.10 LAND ACQUISITION

In 1988 the District purchased the Lost Lake Tract (230 acres) as part of the WHMP requirement. This tract contains a high quality lake and wetlands complex and other high quality wetlands.

The District/USFS/DNR land exchange was completed in 1991. The District acquired over 4000 acres at Spada Lake and Williamson Creek. This included the entire Williamson Creek Tract identified for acquisition in the WHMP. The 376-acre tract includes 268 acres of old growth, 28 acres of mixed forest, 34 acres of riparian forest and at least 6 acres of wetland, all of which will be preserved and protected. With the exception of existing recreation sites and areas used for hydroelectric operations, the land in the Spada Lake Tract has been incorporated into the wildlife habitat management program as prescribed by the WHMP and the Spada Lake Tract Supplemental Plan. The WHMP called for at least 700 acres from the land exchange be added to the original Spada Tract of 1938 acres. An additional 1059 acres was obtained in the exchange and incorporated into the WHMP for a current tract of 3697 acres. The Supplemental Plan was approved by the FERC on April 18, 1997 and will guide future forest vegetation management for that tract. The Spada Tract includes 214 acres of old growth forest, 26 acres of wetlands and over 11 acres of riparian forest.

The City/DNR land exchange was completed in late 1991. All of the land specified in the WHMP in the Lake Chaplain Tract was acquired by the City and dedicated to management under the WHMP.

### 4.11 WILLIAMSON CREEK TRACT

Monitoring of the Williamson Creek tract (Figure 17) has focused on baseline inventories of the stands for snags, CWD, understory vegetation, wetlands and photo documentation. The status of inventorying on each stand is summarized in Table 11. Note that old growth inventory includes snags, CWD, understory vegetation inventory and photo documentation. Wetland monitoring will be conducted at least every five years. Baseline inventory was completed in 2003. Monitoring activities will continue in the future.

Field procedures beyond those described in the WHMP have been developed specifically for the Williamson Creek Tract, as described more fully in the Williamson Creek Standard Operating Procedures (PUD 1999). Baseline surveys were conducted in old growth stands to descriptively characterize snags, CWD and understory vegetation. Baseline surveys began in 1998 and were completed in 2003. Snags and CWD were inventoried following the standards for sampling these elements on the Lake Chaplain and Lost Lake Tracts. The minimum size for snags was 10' tall and 11" DBH, for CWD it was 10' long and 11" diameter at

the large end. On the Williamson Creek Tract, transects were located along reasonably accessible walking routes determined in the field. The goal was to sample enough transects within each stand to provide at least 5 percent coverage. Each transect was 330' x 66' (0.5 acres). Understory vegetation on old growth stands was inventoried by sampling 1/100th-acre circular plots at each end of the snag and CWD transects. Species occurrence was noted and notes were taken describing the biologist's overall characterization of the stand. During the surveys, photos were taken to illustrate stand characteristics that the biologists consider representative of these stands and descriptive notes were taken. Additional photo-documentation was done in 2005 on these thinned stands.

Table 11. Williamson Creek Baseline Inventory Summary through           2003						
Stand #	% Complete	Type of Inventory	Year of Inventory			
10-1	100	Snags, CWD, photodoc.	2000			
10-2	100	Old growth	2000			
10-3	100	Snags, CWD, photodoc	2000			
10-4	100	Snags, CWD, photodoc	2000			
10-5	100	Snags, CWD, photodoc	2000			
10-6	100	Old growth	2000,2002,200			
10-7	100	Old growth	1999,2000,200 3			
10-8	100	Old growth	2003			
10-9	100	Old growth	1999			
10-10	100	Wetlands	1998			
10-11	100	Old growth	2001,2002			
10-12	100	Old growth	2001			
10-13	100	Photodoc	1998			
10-14	100	Photodoc	1998,1999			
10-15	100	Photodoc	1999			

Tables 12 and 13 summarize baseline inventory data for natural snags and CWD collected to date. Additional snags have been created in stands 10-1, 10-3, 10-4 and 10-5 (Table 12). The number of snags on the old growth stands ranges from 1.3 to 12.3 per acre. The amount of CWD on old growth stands ranges from 12.0 to 52.4 per acre.

The second growth and riparian forested stands (10-1, 10-3, 10-4, and 10-5) adjacent to Williamson Creek (Figure 17) were inventoried in 2000. The WHMP calls for retaining stands 10-1 and 10-4 as riparian forest without harvesting through the life of the plan. These stands were cover-typed as riparian, mixed, and small saw timber coniferous forest in the WHMP, which requires snag management, maintenance and monitoring in these stands. No snags were found within the transects in stand 10-1 and an average of 1.8 natural snags/acre were found within the transects in stand 10-4 (Table 12). Snags were created in

2001 in stand 10-1 and were completed in 2002 (Table 9). This stand is primarily composed of small (10-15") conifers and alders. As a result, snag creation potential is limited at this time. Snag creation in stand 10-4 was completed in winter 2001, with 13 snags created (Table 9).

Summary, Completed 2003						
Stand #	Cover Type	SNAGS/A C. (all decay classes)	Avg. Diameter (in.)	Avg. Height (ft.)		
10-1	Small Saw/Riparian	0.0	0.0	0.0		
10-2	Old Growth	1.3	15.1	12.0		
10-3	Riparian/Mixed	0.4	21.8	14.0		
10-4	Riparian/Mixed	1.8	17.0	32.6		
10-5	Large Saw/Riparian	2.8	24.3	31.3		
10-6	Old Growth	12.3	31.3	34.6		
10-7	Old Growth	11.1	29.3	38.5		
10-8	Old Growth	9.0	31.0	43.8		
10-9	Old Growth	9.5	24.2	45.0		
10-11	Old Growth	5.6	29.9	43.6		
10-12	Old Growth	6.0	30.7	38.3		

Table 12, Williamson Creek Tract Natural Snag Cumulative Inventory

 Table 13. Williamson Creek Natural CWD Cumulative Inventory

 Summary, Completed 2003

Stand #	(i)Cover Type	CWD/ac. (all decay classes)	Avg. Diameter (in.)	Avg. Length (ft.)
10-1	Small Saw/Riparian	3.0	24.3	25.7
10-2	Old Growth	12.9	19.8	63.6
10-3	Riparian/Mixed	4.0	18.8	24.7
10-4	Riparian/Mixed	1.5	27.3	50.8
10-5	Large Saw/Riparian	2.1	19.7	56.5
10-6	Old Growth	38.0	22.8	40.6
10-7	Old Growth	21.1	29.0	49.2
10-8	Old Growth	12.0	29.5	54.7
10-9	Old Growth	52.4	24.0	43.9
10-11	Old Growth	37.6	25.7	41.8
10-12	Old Growth	36.0	24.9	54.7

The WHMP calls for retaining stands 10-3 and 10-5 for late successional stage species. These stands were cover-typed as mixed, deciduous, riparian, and large saw timber coniferous forests in the WHMP, which requires ensuring adequate snags and CWD on these two stands. Snag management and monitoring is required for the life of the plan. The baseline snag and CWD inventories were completed in these two stands in 2000. The average number of snags/acre was 0.4 and 2.8 on stands 10-3 and 10-5 respectively (Table 12). The average number of CWD/acre was 3.9 and 2.1 on stands 10-3 and 10-5 respectively (Table 13). Snag creation was completed for both stands during the fall/winter of 2001. Twenty-eight snags were created in stand 10-3 and 12 snags were created in stand 10-5 (Table 9). Stand 10-3 had several irregularly distributed pockets of natural snags which were found, and thereby reduced the number of created snags required.

#### 4.12 LAND MANAGEMENT

The co-licensees have worked with landowners in the Sultan Basin since the WHMP was initiated in an effort to coordinate land use activities so that they are consistent with, or at least do not interfere with management of the WHMP. Activities on adjacent property have included recreational pursuits, timber harvest, surveying, and road maintenance and abandonment.

The DNR is in the process of preparing a Natural Resource Conservation Area (NRCA) plan for the Upper Sultan Basin and the co-licensees have been following that process and providing input since 1999. The co-licensees have provided comments to DNR during the planning process and on working drafts of the plan.

In compliance with Washington Forest Practice Rules (WAC 222-24-050 through 052), the District prepared and submitted in 2001, a Road Maintenance and Abandonment Plan (RMAP) Inventory Scheduling Proposal and an RMAP covering all of the District owned wildlife mitigation lands. Implementation of the RMAP began in 2002. Spur roads SL-22, SL-61, SL-48 and SL67 were officially abandoned in the Sultan Basin under WAC 222-24-052(3). The District hired a geotechnical engineer in 2003 to prepare plans for maintaining the road from Olney Pass to the dam. Plans were completed, appropriate permits were obtained and the work was completed in spring 2005. District biologists observed Culmback Dam Road repairs and stayed apprised of activities to assure that Forest Practices were followed. The City completed its RMAP for the Lake Chaplain Tract in 2002 and obtained DNR approval.

The District and the DNR negotiated a Routine Road Maintenance Agreement in 2001 for roads associated with project mitigation lands in the Sultan Basin. Annual meetings are held between the co-licensees and DNR to discuss road and land management activities. Also in 2001, a supplemental easement was obtained on a portion of road CD-147 (see District RMAP) owned by DNR.

## 4.13 JACKSON PROJECT RELICENSING

Activities accomplished to date are summarized in Section 3.12 of this report. Table 4 shows a summary of wetlands on WHMP lands that have been evaluated in 2004 and 2005 using the Department of Ecology's Washington State Wetlands Rating System for Western Washington.

## 5.0 WORK PLANNED FOR 2006

### 5.1 FOREST VEGETATION MANAGEMENT

### 5.1.1 Lake Chaplain Tract

The Crazy Bear timber sale will be sold in 2005, with the possibility that logging may begin in the same year.

Tree seedlings on all harvested units of the Phone Line Sale (planted in 2005) will be monitored for survival and vigor, and the density and distribution of hardwoods will be evaluated on selected older units. The older plantations will be monitored for bear damage. In some units, including Divr2-95, it is possible that hardwood density in certain patches may be reduced; however, the target hardwood overstory composition will remain 5 to 10 percent.

#### 5.2 SNAG AND CWD MANAGEMENT

Snag creation activities in 2006 will focus on completing those 13 units at Lake Chaplain and 5 units at Spada Lake that were initially scheduled for snag creation in 2005. Additionally, several units at Lake Chaplain will be re-visited for the 10-year inventories and snag tree monitoring, to determine longevity and wildlife use of created snags and to remedy any deficits in numbers of snags.

### 5.3 REVEGETATION

#### 5.3.1 Spada Lake Drawdown Zone

Annual monitoring of wetland plantings and natural recruitment of vegetation was completed in 2002, but the sites may be informally monitored when District staff is in the vicinity.

### 5.3.2 Power Pipeline Right-of-Way

Noxious weeds will be controlled as in previous years, with their locations and control efforts noted.

### 5.3.3 Lake Chaplain Tract and Powerhouse Site

Monitoring and routine maintenance will be conducted as in previous years. Some tree seedlings and small shrubs will be added to plantings in the Sultan Bridge area to compensate for ground cover plantings that did not survive in 2004.

## 5.4 NEST STRUCTURES

#### 5.4.1 Floating Nest Platforms

Floating Nest Platforms will be monitored when other activities are conducted at Lost Lake and Spada Lake, and will be checked at the end of the nesting season to record any signs of use.

#### 5.4.2 Nest Boxes

Nest boxes will be cleaned and repaired as necessary by the end of February in preparation for the upcoming nesting season. Boxes will be checked in early summer to record species use and nesting success rates.

#### 5.4.3 Osprey and Bald Eagle Nests

The osprey platforms at Spada and Lost Lakes, and the bald eagle nest at Lake Chaplain will be monitored in conjunction with other activities, but typically at least once per month, to record nesting use.

### 5.5 DEER FORAGE MONITORING

The following harvest units will be monitored in 2005: Tiki1-98, Tiki2-98, and Divr1-95.

## 5.6 WILLIAMSON CREEK TRACT

Baseline inventories have been completed on the Williamson Creek Tract. Standard Operating Procedures call for monitoring of the wetlands, old growth and mixed forest stands on a continuing, but less intense basis. Monitoring of the wetlands is scheduled for the Williamson Creek Tract in 2006.

### 5.7 LAND MANAGEMENT

The District will continue implementation of the RMAP and will prepare and submit an annual report to DNR. The City will implement its RMAP on the Lake Chaplain Tract.

The Co-licensees will continue to work with DNR on their NRCA plan for the Upper Sultan Basin, providing comments and suggestions on plans (habitat objectives, fire management, etc.) as needed and coordinating land management in the basin.

### 5.8 JACKSON PROJECT RELICENSING

District biologists will participate in developing proposed study plans and other associated relicensing activities.

District biologists will continue to study project wetlands, using the Department of Ecology's Washington State Wetlands Rating System for Western Washington.

### 5.9 SPADA LAKE TRACT SUPPLEMENTAL PLAN

The Spada Supplemental Plan for the period 2006-2015 will be completed by District staff and submitted to agency reviewers for comment.

#### 5.10 SECURITY MEASURES AT LAKE CHAPLAIN/JACKSON PROJECT FACILITIES

The District will continue testing the operations of the security systems installed in the vicinity of Culmback Dam in late 2005. District biologists will review the systems.

Major Activities	Location	Quantity
Road Construction	Lake Chaplain Tract	TBD
Final Harvest		
Timber Sale (Crazy	Lake Chaplain Tract	2 units
Bear Sale)		
Plant Phone3 harvest	Lake Chaplain Tract	1 unit
unit		
Thinned unit monitoring	Spada Lake Tract	All units
Final harvest unit	Lake Chaplain Tract,	3 units, others TBD
monitoring	Phone Line Sale, older	
	piantations	
Spag Creation	Lake Chaplain Tract	12: possibly Crazy Boar
Shag Creation		Sale units
Snag Creation	Spada Lake Tract	5
Snag Inventory	Lake Chaplain Tract	TBD
	Spada Lake Tract	120
CWD Creation	Lake Chaplain Tract	TBD, if Crazy Bear Sale
	·	is harvested
Revegetation		
Grass seeding/fertilizer	Pipeline ROW	As needed to improve
Shrub plantings	· · · · · · · · · · · · · · · · · · ·	bare spots
Monitoring		
Revegetation Site	West side, Chaplain	Monitoring of all
Monitoring/Maintenance	Marsh	planted/seeded areas.
	North end, Lake	Maintenance as needed:
	Chaplain	Weeding, brush thinning,
	Powernouse site	etc.
Deer Forage	Lake Chaplain Tract	3 unite
Spage	Lake Chaplain Hact	Created snar trees
Onago	Lake Tracts	Created shag hees
Nesting Structures	Lost Lake, Spada Lake,	Monitor all structures
	and Chaplain Tract	
Wetland Monitoring	Lost Lake, Williamson	All wetlands designated
Ū	Creek	in SOPs
Williamson Creek		Wetlands
monitoring		
Noxious weeds	All WHMP lands	Develop monitoring plan
		SOP and control weeds
		as needed
Biosolids Application	Lake Chaplain Tract	None planned
Understory monitoring		None planned

## 6.0 SCHEDULE OF ACTIVITIES FOR 2006

Major Activities	Location	Quantity
Water quality monitoring	Chaplain Creek	2 stations
GTA and BZ Management	All established units	Boundary tag, monitor and develop long-term management plans
Land Management	Spada Lake Tract	RMAP implementation.
	Lake Chaplain Tract	RMAP implementation
Relicensing	All WHMP lands	Prepare study plans; keep stakeholders informed, related relicensing activities.
Spada Lake Tract Supplemental Plan	Spada Lake Tract	Complete Plan for 2006- 2015

# **APPENDIX 1**

## MEETING MINUTES ANNUAL WHMP MEETING March 17, 2006

#### Attendees:

- City of Everett: Dan Mathias, Julie Sklare
- DNR: Calvin Ohlson-Kiehn
- PUD: Karen Bedrossian, Bruce Meaker, Mike Schutt, Dawn Presler, Bernice Tannenbaum
- Tulalip Tribes: Michael Sevigny
- WDFW: Rich Johnson

#### Introductions

The meeting began at 9:43 am. Attendees introduced themselves.

#### **Overview** of WHMP

The WHMP was developed in consultation with the U.S. Fish and Wildlife Service (USFWS), Washington Department of Wildlife (now Washington Department of Fish and Wildlife, WDFW), U.S. Forest Service (USFS) and the Tulalip Tribes (Tribes) and was approved by the Federal Energy Regulatory Commission (FERC) in 1989. Goals for mitigation land selection were to: 1) acquire similar habitat, 2) in Project vicinity, 3) preserve old growth, wetlands, riparian habitats, and 4) use Habitat Evaluation Procedures (HEP) analysis to quantify impacts. Impacts to wildlife were originally assessed in 1982 by WDFW using HEP. The 1982 HEP was updated in 1986 and used as a basis for determining the habitat emphasis of the WHMP (impacts compared to mitigation HEP). The final configuration and adequacy of the plan were determined through consultation and negotiation with the wildlife resource agencies and Tribes. As a result of the land exchange there was an extra 1000 acres in the mix.

The WHMP addresses Project impacts through 2060. Annual reports were required through 1995. We are currently required to provide FERC with a report every five years. The co-licensees have chosen to prepare annual reports that are sent to the agencies and Tribes. All significant changes to the WHMP are developed in consultation with the agencies and Tribes and are documented in the annual reports and meeting minutes.

#### **Overview of Tract Lands**

There are 5 tracts totaling over 7000 acres. The PUD owns roughly 4,300 acres, and the City owns the remaining 2,700 acres.

<u>Lake Chaplain Tract</u>: Owned by the City of Everett. Includes 50 acres of old growth and 240 acres of adjacent second growth forest managed for old growth characteristics. It includes wetlands, riparian forest, deciduous, and mixed forest management. The baseline for this tract was a plan the City had in place to harvest the tract in three large

harvest units. Under the WHMP approximately 1300 acres of second growth is managed on a rotational harvest basis. Each unit is less than 26 acres and units are spaced so that adjacent stands are providing cover. Coarse woody debris (CWD), snags and green tree retention areas (GTA) are provided within each harvest unit. Preserving water quality is the highest priority.

Lost Lake Tract: Over 200 acres. Purchased by District in 1988 as part of the WHMP to protect it from residential development. Preserving high quality lake and wetlands is the highest priority. The upland forest is managed for species such as deer, grouse and chickadees as requested by the wildlife agencies. The WHMP calls for maintaining it as mixed forest which includes small harvest units and snag management. Harvest units would be less than 10 acres, but to date, no harvest has occurred here. Harvest has been deferred until conditions indicate that harvest activities would benefit wildlife. Precommercial thinning (PCT) was completed on a portion of one stand roughly 15 years ago to remove excess stems and increase forage production. Artificial nest structures (floating nest islands, duck nest boxes and osprey nest platforms) are provided here. Public access to the Tract is allowed via hike-in access only.

<u>Project Facility Tract</u>: consists of the Right-of-Way (ROW) and Powerhouse areas. WHMP management goal is to produce quality meadow, grassland, open woodland habitat. Vehicle access has been restricted and seeding, planting and fertilizing has been conducted.

Tribes - Asked about the type of seed mix used on the ROW and wildlife use of the area, as well as the creation of permanent meadow areas. PUD - Explained that a mixture of locally adapted annual and perennial rye grasses, fescues and clovers is used. Wildlife observed on the ROW over the years includes coyote, cougar, black bear, cottontail rabbit, raven, and grouse. Hunters say it is productive for deer. The WHMP mitigation lands have little permanent meadow; however, rotational harvest at Lake Chaplain Tract was intended to provide the same type of forage resource for wildlife. The idea of creating permanent meadow areas was discussed. Maintaining an area in a meadow-like condition would be difficult on WHMP lands because of the terrain and soil conditions. It would be an expensive proposition relative to the benefit that would be gained. One option discussed was to utilize relatively flat areas along the ROW, where the PUD owns a 90' wide permanent easement. Currently, only the 30'-wide area directly above the pipeline is mowed annually, with the fringes allowed to grow into alder saplings. The area under the alders provides excellent grass/forb habitat, likely due to the supplemental nitrogen available from the alders. If these were removed to open the area further, additional fertilization would likely be required.

<u>Spada Lake Tract</u>: District obtained tract in a 1991 land exchange between the District, USFS and DNR. WHMP Supplement, approved in 1997, is the detailed management plan for the Spada Lake area. It is currently being updated. The plan divides the area into 3 management units: 2 managed for forest interior species by preservation and promoting a multi-storied canopy with snags, CWD and thinning. The Spada Tract includes 214 acres of old growth which will be preserved. The third unit (along the South Shore road) calls for managing coniferous second growth forests to produce habitat for species that use earlier forest successional stages and to encourage forage production for deer. Artificial nesting structures (floating nest islands, duck nest boxes and osprey nest platforms) are also provided here. Vegetation test plantings have been conducted along the shoreline where the slope and wave action are limited. Several species that were planted have spread vegetatively to some extent. Natural colonization has occurred and has been much more successful, with vegetation growing down to an elevation of 1435 feet.

<u>Williamson Creek Tract</u>: Comprised of 380 acres, obtained by the District in the 1991 land exchange. It is the tract with the most old growth -- 270 acres. It also contains high quality wetlands and riparian habitat. Management calls for preserving existing habitat with an emphasis on late successional wildlife species.

#### **Overview of Management Activities**

Old growth, wetlands and riparian habitats do not require much active management; mostly baseline studies and monitoring are performed. Most management activity occurs in second growth forests at Lake Chaplain and Spada Lake, to improve forest stands and understory vegetation for wildlife. Methods include precommercial and commercial thinning, gap creation and small clearcuts (at Lake Chaplain only) spaced in location and time to create more edge and ensure forage and cover are in close proximity. Green tree areas, snags and coarse woody debris are provided.

Discussion regarding the various methods of forest vegetation management. Precommercial thinning – trees too small to sell. Commercial thinning – trees large enough to be merchantable. Thinning reduces competition for water, light and nutrients, permits growth of understory and allows the forest canopy to grow more rapidly. Variable density thinning is the management technique used. Rotation for clearcut stands at Lake Chaplain is ~60 years. Commercial thinning is scheduled for some of the 60year rotation stands Some 60-year rotation stands not suitable for commercial thinning. Clear-cutting has been done only on the Lake Chaplain tract. Clear-cuts 10 acres or less are prescribed for the upland second growth forest on the Lost Lake tract but have been deferred following consultation with the resource agencies until conditions indicate that it would be more beneficial to wildlife.. To date, 152 acres have been pre-commercially thinned across the Lost Lake and Spada Lake Tracts, 72 acres on the Lake Chaplain Tract, 140 acres commercially thinned on the Lake Chaplain and Spada Lake Tracts, and 300 acres clear-cut on the Lake Chaplain Tract.

Existing snags are preserved in all managed forest stands when possible, although within clear-cuts it is usually only safe to leave them along the edges of units away from roads. The target number of snags on WHMP lands is 307 per 100 acres (roughly 3 per acre). For snag creation, trees are topped to kill them; they are basically cut half-way up (60 feet tall). Tops are left in the area where they fall, and when created in harvest units, are incorporated in brush piles so light can get to ground and tree seedlings can be easily planted around the brush piles. On the Spada Lake Tract, snags are created in groups, to open gaps in the forest canopy and allow light to penetrate to the forest floor to encourage understory growth. Since much of the Spada Lake area is unsuitable for road building,

commercial harvest of timber has been limited, and gap creation is being used to reduce the density of trees.

Co-licensees tried girdling trees in the past. Disadvantage was trees fell over much sooner than if they had been topped. One benefit from girdling is that significant limbs left for wildlife. Snags can be taller and have more structure. Cheaper and quicker because done near the ground, only a couple feet off the ground needed to kill the tree. DNR has done pilot studies around here. More discussion will occur on this subject.

Lake Chaplain Tract forest management – East of Lake Chaplain is a buffer area which includes old growth– no harvesting, mosaic of different ages, manage for diversity. 10-30% hard wood composition is target in harvested units. , Harvest schedule is in WHMP. Average of less than 26 acres is harvested per year.

Spada Lake forest management – younger stands, commercial thinning limited due to road system and poor soils, need to maintain high water quality in this area, no clear cutting. Commercial thinning typically leaves ~150 trees/acre. Try to promote/encourage old growth characteristics. There are over 200 acres of old growth in this tract.

There is no longer access to WHMP stands on the north shore of Spada Lake, following DNR's abandonment of the North Shore road system. South Shore Road is open but DNR wants to abandon it. South Shore Road is prone to slides and has fish passage issues (needs new culverts). DNR has agreed to wait on abandoning the road until up to 2011 or when relicensing requirements are more defined. DNR has no plans to harvest using the South Shore road. IAC wants to look at converting roads into trails. Hunting is allowed in this area. North Shore Road is officially abandoned, but there are deep water bars that are not optimal for hiking or mountain biking.

Deer Forage – monitor occurrence of understory vegetation on harvest units at Lake Chaplain. As expected, the amount of forage available decreases as the trees grow taller and wider. Pre-commercial thinning will be used to keep the forest floor open enhance production of forage plants.

Snags – preserve natural snags if possible during harvest. Create new snags from live trees according to targets listed in the WHMP. Goal is 3 snags/acre. Bernice has been monitoring older snags, within 3 years, 85% of snags are used by woodpeckers, mostly for foraging use. Created 2,266 snags at Lake Chaplain and Lost Lake and 818 at Spada Lake and Williamson Creek. Not yet to 3 snags/acre throughout the management lands; it is ongoing process. Units where snag creation has occurred are re-inventoried every 10 years to determine the need for additional creation. WDFW asked where 3 snags/acres comes. PUD replied that it comes from table 2.2 in the WHMP (page 2-13) which is based on Forest Service research (Neitro, et al. 1985). It was stated in the meeting that the numbers used in the WHMP were based on meeting 60% of woodpecker needs, but that is not correct. Page 2-13 of the WHMP and Neitro et al. page 145 (of E.R. Brown, ed. Wildlife and fish habitats in forests of western Oregon and Washington, USFS Publ. No. R6-F&WL-192-1985, Portland) show that the WHMP targeted for 100% of snag

needs for primary and secondary cavity nesters common to the area. Current research may indicate that needs are different. Literature will be reviewed and discussed with the resource agencies. PUD stated that specific WHMP requirements were all part of the negotiated plan and should be viewed in that context. Not all features included provide optimal habitat conditions. Mitigation was not necessarily to optimize any particular habitat feature, but to replace or compensate for what was lost from the inundation of lands behind Culmback Dam, as identified by the HEP analysis. WDFW queried that if current research shows that WHMP goals are now inadequate, how could we go about changing our requirements.

Coarse woody debris – 8 large logs/acres post harvest (new or existing). 16" minimum large end diameter, 20' minimum length. Discussion ensued regarding CWD, with DNR asking if 24" was the minimum size. PUD responded that logs are based on 20' minimum length, with a large end diameter of 16", so that one large tree could yield multiple logs, even though the tree would be left in one piece on the ground.

WDFW inquired about population studies to determine if the WHMP is having the beneficial effect as intended. PUD responded that population studies have not done because WHMP land acreage is small in comparison to surrounding lands,, would not be able to tell co-licensee effects versus adjacent landowner effects. Co-licensees are meeting the goals of the WHMP, to mitigate for the habitat values lost.

Snags exist through creation, normal tree mortality, wind throw, disease and through other natural means. Sun scald occurs around the edges of harvest areas, trees are not acclimated to so much sunlight and sometimes die. 3 snags/acre is what is created on harvest units, more exist through other means. Snags are inventoried every 10 years. Additional snag creation will occur this spring and fall on Lake Chaplain tract; there were no bidders for the job last fall.

There is also a green tree requirement for harvest units. For every 5 acres harvested, <sup>1</sup>/<sub>4</sub> acre is left unharvested, usually next to buffers or at the edges.

Buffer zones are established along the lake shore as well as streams and wetlands to preserve high water quality. Small wetlands not identified are ok to harvest, subject to negotiation with City forester and in compliance with Forest Practices.

Revegetation work has included vegetative screens along the north shore of Lake Chaplain and Chaplain Marsh, to reduce disturbance to waterfowl and other wildlife. Native plants that produce fruits or berries, are drought tolerant, and can survive in poor soil are used. Test plantings of aquatic grasses and rushes have been done at Spada Lake in the Williamson Creek and North Fork mouths, where the slope is relatively shallow and wave action would not scour out the plants. Some of the planted species have survived well and spread well since planting, but others have died out entirely. Additionally, native plants from the perimeter of the lake have begun to recolonize the drawdown zone. Growing conditions are difficult in this area; within a one year period, the water level typically varies within this zone from elevation 1,410 to 1,445, so plants must be able to withstand being inundated during the spring and early summer, and tolerate being out of the water during the late summer and early fall.

Some areas including pipeline ROW, Marsh Creek area, have had trouble with ORV's. ORV problems are getting better due to boulder and stump pile placements, and gates being installed to reduce access.

Artificial Nest Structures: Among the management tracts, we have a total of 22 duck nest boxes, 4 floating islands and 3 osprey nest platform. Bear damage to the nest boxes has emerged as a significant problem in recent years. Do not currently have boxes over open water, will look into it. Possible locations are: Chaplain Marsh, either end of Lost Lake, snags in Spada. **Tribes** stated that their research showed that ~2 meters was the best height over open water to keep the bears out. Using posts is better than trees, harder for predators to climb. **WDFW** inquired why the nesting islands were not used, when loons and geese are relatively common spring and summer residents. **PUD** stated that even though other areas (i.e. Seattle City Light) has success with loon use of nesting islands, the surrounding habitat is not suitable at Spada Lake. There is a lack of overhanging cover as well as low food production.

Biosolids application: Used biosolids on several harvested units, nitrogen supplement needed. Water quality monitoring in Chaplain Creek and understory vegetation response. Benefited trees and understory, no adverse affects on water quality.

### **Relicensing Status**

Karen reviewed recent and upcoming milestones and dates for relicensing. PAD comments and study requests due March 31, 2006 to FERC. The one required Proposed Study Plan meeting is scheduled for June 8, 2006; however, there probably will be additional meetings to focus on specific studies or issues.

The co-licensees proposed in the PAD to conduct a noxious weed study to collect more information about existing conditions in the Project area and develop a noxious weed management plan, conduct a rare plant study, and to conduct riparian and riverine habitat mapping downstream of Culmback Dam. Details of the studies can be found in the PAD Section 6.3

City noted that FERC looks at "baseline" conditions which are current conditions, not Pre-Project conditions. PUD emphasized that WHMP HEP included construction impacts through 2060, not just the current condition beyond 2011.

WDFW concerns:

• How many animals do you have? What do you need to do differently? Should you target different species? Maybe review literature to get to answers? Maybe focus on supporting endangered species? Co licensee responses are stated above and include: *small WHMP land area makes it hard to control/quantify populations;* 

cannot single out WHMPeffects versus surrounding landowner impacts. We are targeting habitat and can measure those changes.

- Are you purchasing additional lands? Braided channel was inundated and that habitat has not been fully replaced. Co licensee reponse: We have all the lands we need to mitigate impacts as addressed in the WHMP package, actually 1000 more acres than needed. Riparian habitat was looked for during WHMP preparation but is very difficult to replicate. Other measures were included in the WHMP instead, such as additional old growth mitigation.
- WDFW would like to see more focus on amphibians. Seems logical and worthwhile addressing them in the future. The WHMP does not manage for amphibians; however, current wetlands, riparian and coarse woody debris provides the habitat. Funnel traps were suggested near wetlands or catch larva to collect data on amphibians. Michael will provide protocols for this. Forest Practices now focus on amphibians.
- General question as to whether all WHMP activities could be done better to increase the benefit for wildlife CT, snags, CWD, clear-cuts, etc. PUD responded that a current literature review of these items would be a logical place to start, to determine how far management of these types of habitat enhancements has progressed since the WHMP was conceptualized and written in the early 1980's.

## **Tulalip concerns:**

- Adequate areas for deer forage? Co licensee response: Provided by thinning, and clear-cuts managed on a rotational basis (see above).
- Tribes- think meadows would provide higher quality habitat. ROW does not provide good quality forage habitat. Interested in long term benefits of permanent meadows. 5 acre tracts, 2 or 3 of them. Large open areas, not long and narrow like the ROW. PCT & CT likely provide only marginal foraging habitat for deer. PUD response: clear cuts are provided on a rotational basis in small harvest units at Lake Chaplain to provide deer forage adjacent to cover. Meadow habitat is most beneficial to elk and project lands are not managed for elk. Elk occur along the Skykomish at lower elevations. WDFW does not want elk management in this area. Trying to maintain permanent meadow on Project mitigation lands would be difficult relative to the benefits that would be realized. Tribes- Elk are in Monroe, if meadows available in Project area, could support them even if just migratory. Improve soil with use of lime. Plant clover, annuals, perennials, wheat grass, seed producing vegetation. Need to mow regularly, so access is an issue. Discussed the possibility of trying to improve conditions on the ROW since that is the flattest area with the best access. See discussion under Tract Descriptions, Project Facility Lands Tract.
- Purple martins? Found largest population just north of Everett. Michael has purple martin house design, suggests putting some up in Project area.
- Long toed salamander left out of the PAD, think they should be present. Common along with rough-skinned newt and northwest salamanders. They are terrestrial, found in forested wetlands.

WDFW asked how noxious weeds were related to the WHMP. Noxious weeds deteriorate the quality of habitat, displacing native plants. Co licensees will develop monitoring and management program. Will try to coordinate with surrounding land owners and others.

### **Other discussion points:**

- What will the result of habitat mapping on the Sultan River be? The product will be a riverine and riparian vegetation cover type map for the Sultan River below Culmback Dam.
- The Spada Lake drawdown zone has some native plants coming in as volunteers, currently covering more area than our wetland test plantings. Wetland vegetation extends 5-10 feet below high water mark, in areas of the shoreline where land slopes gently.
- Bull frogs are concentrated in Lost Lake, have not seen movement outward. They are an invasive species.
- Marbled murrelets sightings on USFS lands. DNR has done 10 years worth of studies, will be studying Spada area in 2-3 years. USFS may be rethinking doing spotted owl surveys due to barred owl interaction.

Agency and Tribal representatives were unable to take the offered tour of Lake Chaplain and Lost Lake tracts and specific forest vegetation, snag and CWD management sites. Co licensees offered to show them these sites at another time if they would like. The meeting was adjourned at 12:20 pm. Unofficial FERC-Generated PDF of 20060504-0177 Received by FERC 0SEC 05/01/2006 in Docket#: P-2157-000

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