PNP 28-14-15-4

SNOHOMISH COUNTY
PUD
PUBLIC UTILITY DISTRICT No. 1

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Mailing Address: P. O. Box 1107, Everett, Washington 98206

March 31, 1994
PUD 20048

Ms. Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
825 North Capitol Street NE
Washington, D.C. 20426

Dear Ms. Cashell:

RE: Henry M. Jackson Project - FERC No. 2157
Project License Article 53 - Annual Report
Wildlife Habitat Management Program

The 1993 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), which stated "The Licensees shall file with the Commission their annual reports on Phase I. . . ."

This annual report describes activities conducted during 1993, and activities planned for 1994. A comparison of all activities since implementation of the program began in 1989 with activities planned during this period is also included. The activities, procedures and schedules described in this report are 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 (USFWS), the Washington Department of Wildlife (WDW), and the Tulalip Tribes for comment. The Washington Department of Wildlife was also consulted. A meeting was held with agency representatives on March 8, 1994, to request comments and discussion on progress to date and planned activities for 1994. An attendance list and meeting minutes are attached to the Annual Report. Records of all comments received from the agencies at the time of this submittal are attached to the Annual Report. If others are received subsequently from them, they will be forwarded promptly to the Commission.

Please call Bernice Tannenbaum (206)347-4319, if you have any questions on the 1993 Annual Report.

Sincerely,

R. E. Johnson
Assistant General Manager
Electric Systems

Clair Olivers
Director of Public Works
City of Everett

Enclosures

BRT:dkw

cc: G. Engman, Washington Department of Wildlife
G. Ging, U.S. Fish and Wildlife Service
G. Ariss, Washington Department of Natural Resources
R. Young, Tulalip Tribes
A. Martin, FERC, Portland

1993 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

March 1994

TABLE OF CONTENTS

1.0 SUMMARY

Major tasks accomplished during 1993 include: harvest of three 1992 Lake Chaplain units, replanting one of these units; reseeding associated road ROW's, skid trails and harvest units; setup for timber harvest at two Lake Chaplain units (Diversion Sale); salvage of timber that blew down adjacent to 1991 harvest units; continuation of the snag management program; revegetation work at the Powerhouse site and Chaplain Marsh; and monitoring activities. A cumulative summary of tasks accomplished since the initiation of the Wildlife Habitat Management Plan (WHMP) in 1989 is presented in this report.

Tasks scheduled for 1994 include: replanting of salvage areas; sale of the 1994 harvest units, setup of the 1995 harvest units, continuation of the snag management program; monitoring activities, test plantings in the Spada Lake drawdown zone, and completion of the Spada Lake Tract Supplement to the WHMP.

Problems encountered or changes needed during the course of the WHMP implementation are discussed in this report, 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 Wildlife (WDW), and the Tulalip Tribes. The Washington Department of Natural Resources (DNR) was also consulted.

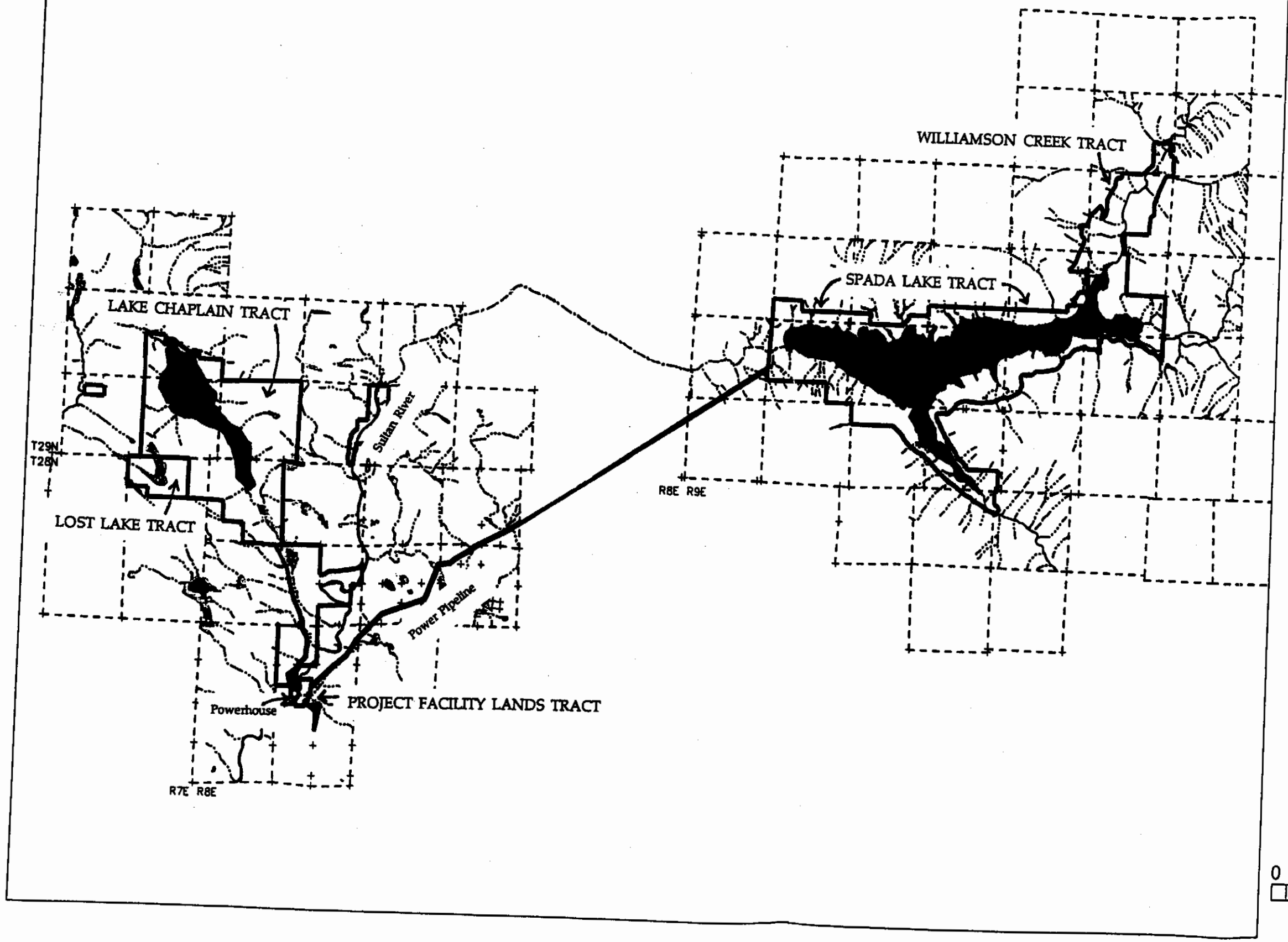
2.0 INTRODUCTION

The 1993 Annual Progress Report on the Wildlife Habitat Management Plan for the Henry M. Jackson Hydroelectric Project (Figure 1) is submitted in response to the Federal Energy Regulatory Commission (FERC) Order Approving With Modification Revised Wildlife Habitat Management Plan (issued May 19, 1989). Public Utility District No. 1 of Snohomish County (District) and the City of Everett (City) are co-licensees in the Project. The WHMP project area and management tracts are shown in Figure 1.

This annual report describes activities conducted during calendar year 1993 and summarizes activities anticipated for calendar year 1994. Activities, procedures and schedules described in this report are based on the (WHMP) submitted to FERC on May 25, 1988 in accordance with Project License Article 53 and subsequent related orders from the Commission.

HENRY M. JACKSON PROJECT
WILDLIFE HABITAT MANAGEMENT PLAN

FIGURE 1 MANAGEMENT TRACTS LOCATIONS



Land Survey
- Land Survey Sections
- \+ Land Survey Monuments

Ownership
- Ownership Boundaries

Hydrography
- Open Water
- Wetlands
- DNR Class 1
- DNR Class 2
- DNR Class 3
- DNR Class 4
- DNR Class 5

North

0 5000 10000 15000 20000 FEET

3.0 WORK COMPLETED DURING 1993

3.1 FOREST VEGETATION MANAGEMENT

3.1.1 Timber Harvest - 1992 Units

For the 1992 timber sale, the City completed final harvest of one unit (13.7 acres) in April 1993, and commercial thinning of two units (total of 35.7 acres) in September 1993 (Figure 2). Roadsides and skid trails were reseeded with a grass/forb seed mix. The final harvest unit was replanted with 300 Douglas fir seedlings per acre in early May. Probably due to the late start, the density had dropped to approximately 250 seedlings/acre by mid-summer.

3.1.2 Timber Harvest - Salvage Sale

Timber salvage was completed in September 1993 in several areas adjacent to the 1991 harvest units that experienced blowdown during a severe windstorm in January 1993 (Figure 2). Only trees that were wind-damaged, (i.e., uprooted or leaning), were removed. Skid trails were reseeded following the salvage operation. Reforestation will be done in early spring 1994.

3.1.3 Sale Layout - 1994 Units

Sale layout for two units (Diversion Sale) shown in Figure 2 was completed in 1993, with the exception of prescriptions for retaining coarse woody debris. The co-licensees are currently discussing the details of prescriptions, as described in detail in Section 3.7.2 and 4.5.

3.1.4 Precommercial Thinning Unit at Lost Lake

Photo documentation stations were re-visited in October 1993, approximately two years after the thinning was completed. The slash resulting from the thinning remains very thick, although all leaves and most fine branches have dropped. All of the large alders that were girdled have fallen to the ground, and some are host to shelf fungi. A shrub layer dominated by salmonberry and salal is developing in trails that were cleared during the thinning, and in areas that were formerly dominated by an alder canopy. There was evidence of deer-browse on salmonberry twigs growing in the trails.

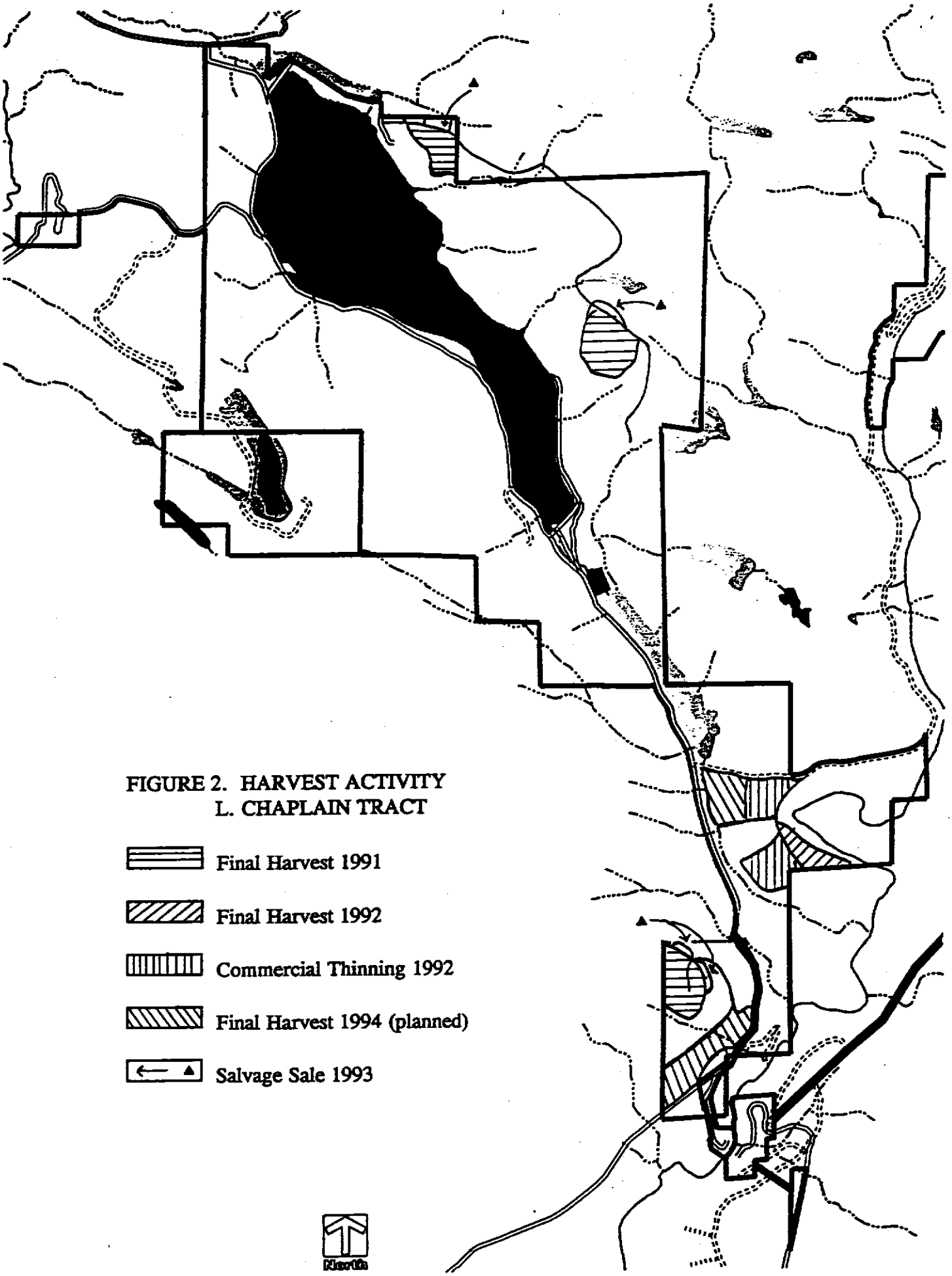


FIGURE 2. HARVEST ACTIVITY
L. CHAPLAIN TRACT

3.2 SNAG MANAGEMENT

Areas in the Lake Chaplain Tract were incorporated into the snag management program in conjunction with the field survey and reconfiguration of harvest unit boundaries. Snag creation was done in the 1991 harvest units and two permanent mixed forest stands early in January 1993, and in the 1992 final harvest unit in June 1993 (Figure 3). A total of 185 snags was created in these units using 4 tree species (Table 1). In addition, approximately 20 snags were created along the Lake Chaplain Road during power line right-of-way maintenance in 1993. Inventories of 1991 and 1992 harvest units (both final harvest and commercial thinning) were done in 1992; additional inventory was done as part of sale layout for two 1994 units (Diversion Sale) totalling approximately 37 acres.

Sufficient trees to achieve the WHMP target density of 3 snags/acre were tagged in final harvest unit 1992-3 during sale layout and preserved during harvest. Six of these trees blew down during a windstorm in April 1993, before the trees could be made into snags. These trees were not salvaged. The fallen trees were not replaced by others for snag creation, and as a result, the unit has slightly less than the target density of snags. In the three 1991 units, a subset of the required number of trees was marked and topped without losses prior to the windstorms, with the remainder to be selected from other trees standing on the unit boundary. Sufficient trees along the boundary will be topped to achieve the target density in these units.

In the future, trees to be made into snags in harvest units will be selected and marked prior to harvest, and topped promptly after the units are harvested, in order to reduce the loss of trees before they are topped. If blowdown of selected live trees occurs and these trees can be salvaged, then replacement trees may be selected in an adjacent harvest unit. If salvage is not possible, then a replacement tree may be selected in the unit's GTA, or an adjacent buffer zone, old growth management area, or permanent mixed forest, if available.

Snag trees were not marked or created in the two 1992 commercial thinning units. Logging operations in these units damaged a number of trees and it was decided to wait one year to see if any of these trees died as a result. If any of the damaged trees die, they will be inventoried as existing snags, and the need for additional created snags may be reduced as a result.

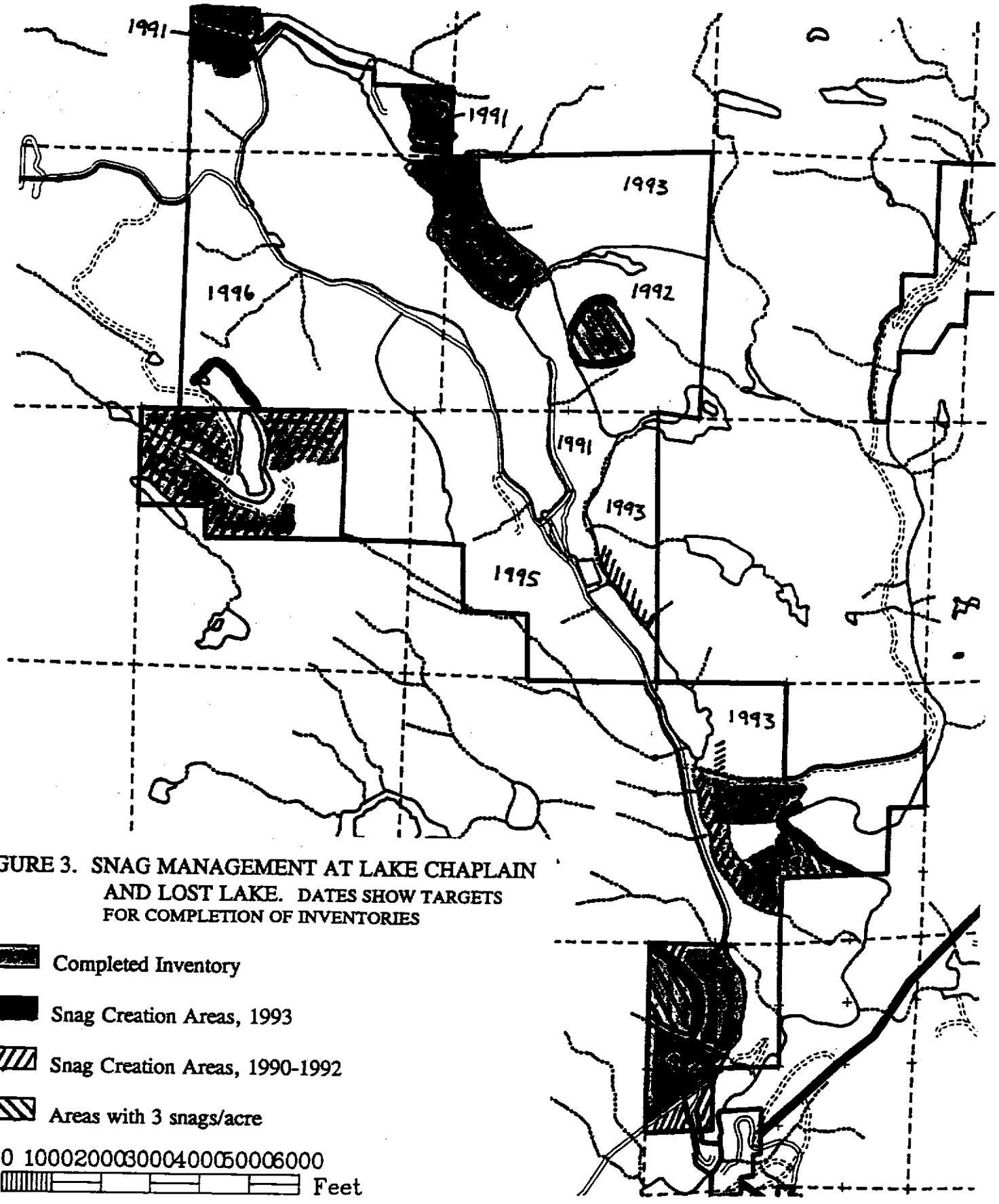


FIGURE 3. SNAG MANAGEMENT AT LAKE CHAPLAIN AND LOST LAKE. DATES SHOW TARGETS FOR COMPLETION OF INVENTORIES

Table 1. **SNAG CREATION IN 1993**

UNIT	SIZE RANGE (INCHES DBH)	AVG DBH (INCHES)	NUMBER
1991-1 (a)			
	11.0-14.9	13.6	8
	15.0-16.9	15.7	11
	17.0-24.9	18.3	10
	25+	25.0	1
	TOTAL		30
1991-2 (a)			
	11.0-14.9	13.3	6
	15.0-16.9	15.3	12
	17.0-24.9	18.2	9
	25+	28.0	1
	TOTAL		28
1991-3 (a)			
	11.0-14.9	14.0	1
	15.0-16.9	15.3	11
	17.0-24.9	20.3	16
	25+	27.2	2
	TOTAL		30
1992-3 (a)			
	11.0-14.9	12.4	17
	15.0-16.9	15.3	6
	17.0-24.9	19.6	14
	25+		0
	TOTAL		37
LOST LAKE			
	11.0-14.9	13.6	5
	15.0-16.9	15.3	13
	17.0-24.9	18.2	17
	25+		0
	TOTAL		35
HORSESHOE BEND OMA			
	11.0-14.9	14.0	3
	15.0-16.9	15.7	11
	17.0-24.9	20.0	11
	25+		0
	TOTAL		25

(a) As of the writing of this report, these units have three (3) snags/acre.

3.3 REVEGETATION

Revegetation work described in consultant reports attached to the 1991 Annual Report was performed in early 1993. Two rows of shrubs were planted along the west edge of Chaplain Marsh and shrubs and small trees were planted at the Powerhouse site. Figures 4 and 5 show planting diagrams. With the exception of holly, native species were used in this project. The plantings benefitted from the damp cool summer conditions this year, and by the end of 1993 were in excellent condition. Browse damage, due to deer and beaver, was limited to 5 or 6 holly plants at the Chaplain Marsh site.

The 14.8-acre portion of the power pipeline between the microwave site near the powerhouse and the fence across the right of way near the Sultan Basin Road was seeded with a grass/forb mix and fertilized in 1993, as in previous years. Improved germination and growth were noted during the summer, but the area continues to suffer from lack of organic material and soil compaction.

The District and the Department of Natural Resources installed a gate on the pipeline access road where it joins the Sultan Basin Road to restrict vehicle access. It is expected that the gate will help reduce vandalism and dumping of trash on the pipeline right of way and aid in revegetation efforts.

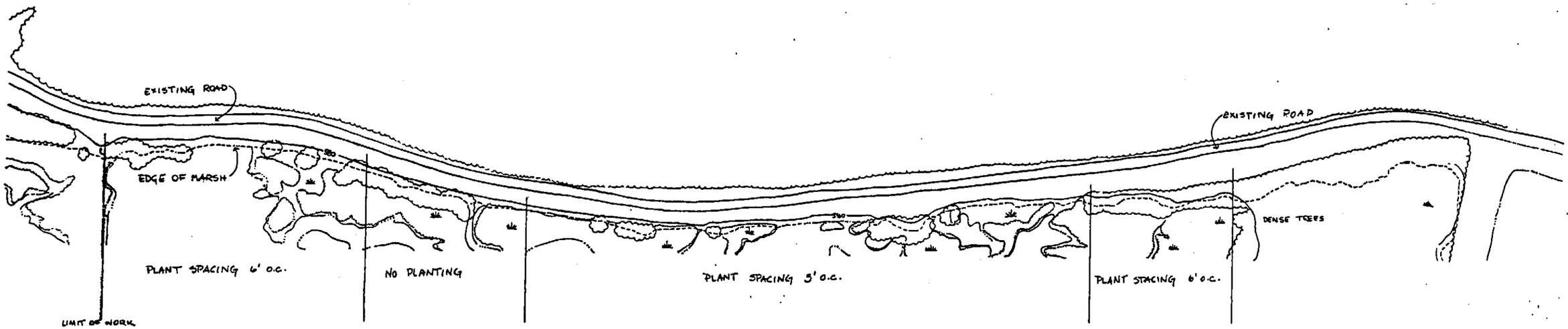
3.4 FLOATING NEST PLATFORMS

Two floating nest platforms were placed in Lake Chaplain and two in Lost Lake in March 1993. Monitoring visits were made by District staff from the opposite side of each lake at least three times per month from late March to the end of May, following monitoring procedures attached to the 1991 Annual Report. Additional monitoring was performed by Jean Cross, a volunteer working on behalf of Washington Department of Wildlife, on a weekly basis. Canada geese, an otter, a crow, and a common merganser family were observed resting on one of the platforms. Waterfowl, not including loons, were also observed in Lost Lake, but there was no observed use of the platforms. None of the platforms was used for nesting in 1993.

3.5 NEST BOXES

Six new duck nest boxes were installed at the southern end of Chaplain Marsh in winter 1993. These boxes plus the two boxes at Lost Lake were monitored by District staff following procedures reported in the 1991 Annual Report. One clutch of 10 hooded merganser eggs was successfully raised at Lost Lake, and one clutch of unknown size was raised by wood ducks at Chaplain Marsh. An additional clutch of 9 eggs (wood duck or hooded merganser) was abandoned in another Chaplain Marsh nest box.

DRAWING NO. 1 - CHAPLAIN MARSH



PLANTING PLAN (Repeat as necessary)
(NOT TO SCALE)

A A B A ROW 1
B B A B ROW 2

A = ~~ARBORVITAE~~ Holly, Western Red Cedar, Huckleberry
B = OTHER SHRUBS

SCALE 100 0 100 FEET

NORTH

FIGURE 4. PLANTING PLAN
EDGE OF CHAPLAIN MARSH

SPECIES	NUMBER PLANTEI (Approximate)
English holly	150
Western red cedar	400
Huckleberry	230
Red-osier dogwood	130
Serviceberry	130
Nootka rose	130
Red-flowering currant	130

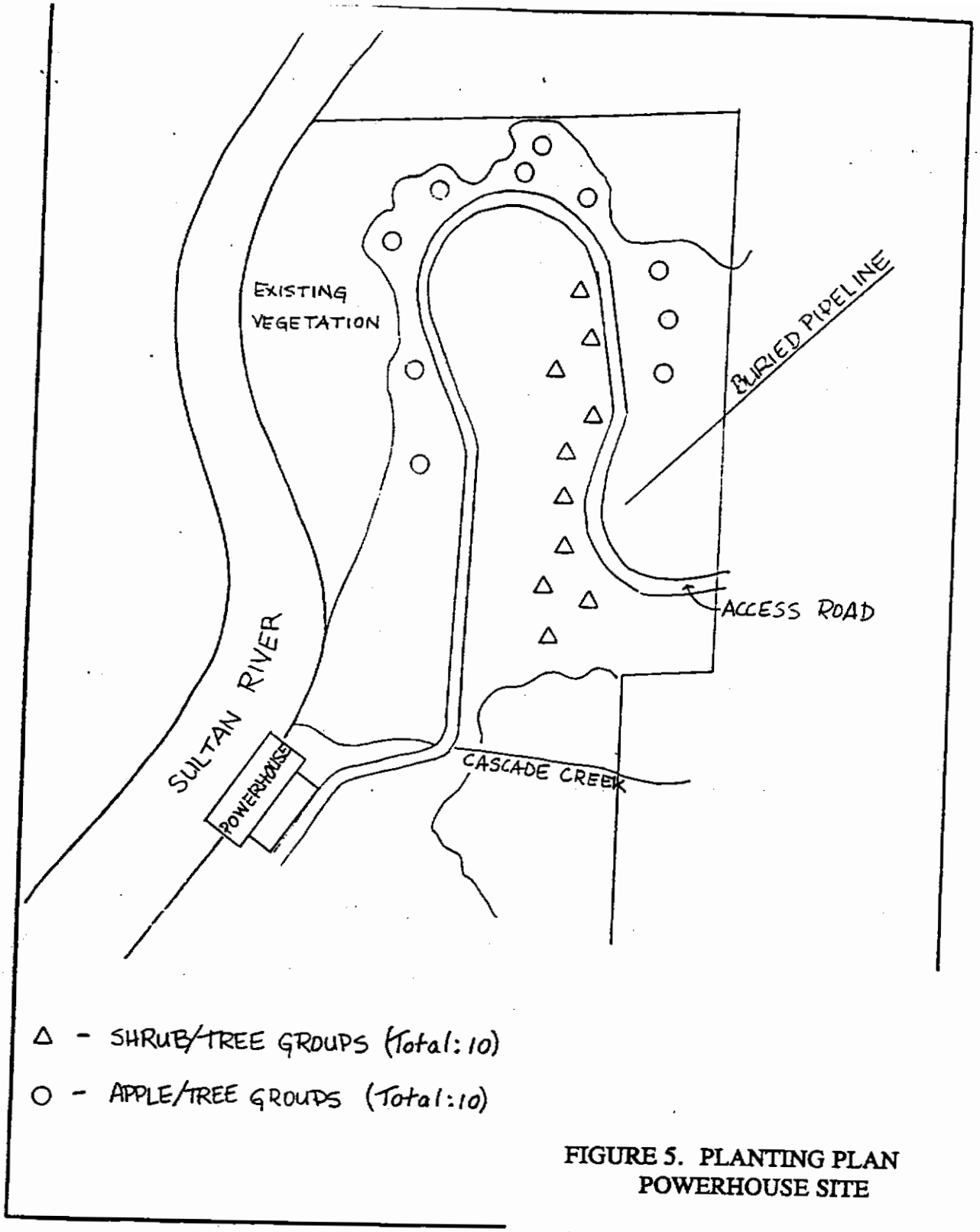


FIGURE 5. PLANTING PLAN
POWERHOUSE SITE

SPECIES	NUMBER PLANTED (Approximate)
Western crabapple	27
Black hawthorn	27
Pacific dogwood	26
Serviceberry	32
Nootka rose	32
Red-flowering currant	33
Red huckleberry	33

3.6 OSPREY NEST PLATFORMS

The osprey nest platform at Lost Lake was monitored by District staff and Jean Cross from the opposite side of the lake during Spring-Summer, following procedures reported in the 1991 Annual Report. A pair of ospreys worked on the nest during April and appeared to be incubating in May. By the first week in June, however, the nest was abandoned. Osprey were observed flying and perched in trees at Lake Chaplain in 1993, but did not build any nests there following the loss of their nest in late 1992. Osprey were seen at various locations at Spada Lake; on one occasion an osprey perched on a branch of the South Fork nest platform tree. There was no evidence of osprey breeding activity at Spada Lake, however.

3.7 MONITORING

3.7.1 Deer Forage Monitoring

Deer forage monitoring continued in previously harvested units. Ground cover was dominated by fern and grass species, but other species more palatable to deer have become more abundant. One unit sampled in 1993 (Unit 1991-1) had 37 deer pellet groups, in contrast with only 4 pellet groups found in the previous year in all of the 1991 harvest units.

3.7.2 Coarse Woody Debris

The three 1991 final harvest units and the 1992 final harvest unit were sampled for coarse woody debris (CWD) post-harvest in 1993, using procedures described in the WHMP. Results are shown in Table 2. The inventory of the single 1992 final harvest unit was supplemented by six blown-down trees that had been allocated as snag trees, plus tree tops of 37 other trees that were made into snags.

Most of the larger logs in all units, of the preferred size stated in the WHMP (at least 24" diameter and 20' long) are remnants of earlier stands in soft decay classes. Average length and diameter of hard logs (classes 1 and 2) are below the preferred size (Table 2).

Results of these inventories have led the co-licensees to discuss whether sufficient coarse woody debris has been left in harvest units to date, and what prescriptions should be followed to ensure that this is done. The District and City have different interpretations of the meaning of statements in the WHMP regarding this matter. The issue was discussed during 1993, and at the time of this writing the matter remains unresolved. Further discussion is presented in Section 4.5 of this report.

Table 2. POST HARVEST COARSE WOODY DEBRIS SURVEY (a)

HARVEST UNIT		AVG DIAM. (INCHES)	AVG LENGTH (FEET)	#/ACRE
1991-1				
	Class 1 & 2 (b)	11.8	12.6	7.8
	Class 3,4 & 5	18.8	16.8	4.8
	All logs	14.4	13.9	12.6
1991-2				
	Class 1 & 2	15.5	10.0	2.5
	Class 3,4 & 5	21.0	18.0	23.1
	All logs	20.7	17.1	25.6
1991-3				
	Class 1 & 2	14.6	16.0	1.9
	Class 3,4 & 5	23.2	16.6	21.5
	All logs	22.5	16.6	23.5
1992-3				
	Class 1 & 2	12.9	12.2	6.9
	Class 3,4 & 5	16.9	14.0	11.5
	All logs	15.4	13.3	18.5
	Brush piles	11.0 feet	4.4 high	16.2

(a) Includes only logs entirely within plots. Does not include created snag tops or blowdown.
(b) Decay class (Bartels et al. 1985)

3.7.3 Green Tree Areas

The timber inventory of the GTA for one 1991 harvest unit was reduced by the January windstorm. The downed trees were not salvaged because it was feared that equipment operation in the areas would damage surviving trees and lead to additional losses. The blowdown area will be replanted in 1994, and no additional area will be added to this GTA. Based on tree growth projections for the GTA , it is expected that the surviving trees, plus new trees, will be sufficient for future snag creation needs in this unit.

Blowdown of GTA's is expected to remain a problem in future harvest units, jeopardizing the supply of trees available to be made into snags. It was agreed that when blowdown occurs in a GTA, options will be considered on a case-by-case basis. Issues to be considered include:

- whether the GTA can be salvaged reasonably,
- replacement possibilities (e.g., adjacent harvest units, PMF's, OMA's), and,
- other constraints.

In addition, blowdown areas will probably be replanted. It was also decided that in the future a management plan and monitoring program should be developed for each GTA. Planting, thinning, brush control, and species composition should all be considered in this plan.

3.8 WHMP SUPPLEMENT FOR SPADA LAKE

Preparation of the WHMP supplement continued in 1993. A draft of the supplement has been submitted to the agencies for review.

3.9 NOTABLE WILDLIFE OBSERVATIONS

Some wildlife observations were noted in Sections 3.4, 3.5 and 3.6 of this report in conjunction with avian nesting structures. Other notable wildlife observations include black bear and mountain lions at the Lake Chaplain and Lost Lake Tracts, a bobcat at the powerhouse, and over wintering bald eagles at Lake Chaplain and the powerhouse. Waterfowl, including loons, grebes, Canada geese, marbled murrelets, and several duck species were observed in Lake Chaplain throughout the spring, summer and fall of 1993.

The DNR conducted intensive spotted owl surveys at Lost Lake and Lake Chaplain during spring and summer 1993. No spotted owl responses were obtained, but barred owls were detected at several locations.

4.0 CUMULATIVE SUMMARY

Previous annual reports have described activities only for the year in question. At the request of agency representatives at the review of 1992 activities, a summary of all activities completed, from the earliest implementation in 1989 through the end of December 1993, is presented here. Accomplishments since the earliest implementation of the plan in 1989 are compared in Table 3 to the targets stated in the WHMP schedule (WHMP, Section 5.0), and in the detailed prescriptions for each management unit. The WHMP specifies activities to be performed in each management stand and unit by number. For reference, copies of the WHMP maps showing management stands and unit numbers are included in Appendix A of this report.

4.1 FOREST VEGETATION MANAGEMENT

Final harvest has proceeded in units on the east side of Lake Chaplain, following identification of property lines, unit layout and road construction on the east side of the lake. Harvest was scheduled for 1990 in the WHMP on five units (Appendix A, Figure 3.5). Three have been harvested (Figure 6). Harvest of a fourth unit has been delayed pending road construction, but it is expected to be completed within the time period permitted by the WHMP (ten years on either side of the target date). Harvest of the remaining 1990 unit was deferred, and another unit will be substituted in the 1994 (Diversion) sale. This substitution will not compromise the WHMP requirement for a 15-year green-up period between the harvest of adjacent units. Therefore, in terms of acres harvested, accomplishments to date are on target (Table 3, Figure 6).

Some of the harvest unit are actually smaller than the acreages listed in the WHMP, due to the reconfiguration of roads, unit boundaries, GTA allocations, buffer zones, etc., but represent reasonable decisions based on actual site constraints.

Some commercial thinning units in the WHMP scheduled through 1993 have been deferred pending road construction, and other units may not be thinned due to unsuitable site conditions (Figure 6). Other commercial thinning units have been substituted, and more units will be thinned where road systems give access, and site conditions are suitable.

Precommercial thinning scheduled at Lost Lake has been completed as planned (Figure 6).

All of the final harvest units were reforested within one year of harvest with a mixture of Douglas Fir, Western Red Cedar, and Black Cottonwood. In all units survival has been acceptable.

TABLE 3. COMPARISON OF SCHEDULED AND COMPLETED ACTIVITIES, 1989-1993

ACTIVITY	SCHEDULED		COMPLETED	
	Stand No. or Location	Quantity	Stand or Location	Quantity
FOREST VEGETATION MANAGEMENT				
Final Harvest	1-3, 1-9, 1-15 3-1, 4-5, 5-8 (a)	116 ac.	1-3, 1-9, 1-15, 4-5, 5-4	79 ac.
			4-5, 5-4, 5-5 (b)	35 ac.
Commercial Thinning	1-9, 1-15, 2-13, 3-1, 4-5	95 ac.	5-4, 5-5	36 ac.
	2-9.	11 ac.		
Precommercial Thinning	7-4.	54 ac.	7-4.	46 ac.
Salvage Harvest	-	-	1991 FH units	5 ac.
SNAG MANAGEMENT				
Snag Creation		2,594 snags		456 snags
Inventory Snags	See Fig. 3	1,000 acres		460 acres
NEST STRUCTURES				
Nest Boxes	7-5.	2 boxes	7-5. 5-14.	2 boxes 6 boxes
Nesting Islands	7-5.	3 platforms	7-5. Lake Chaplain	2 platforms 2 platforms
Osprey Platforms	7-5. 9-11.	1 platform 2 platforms	7-5. 9-4. Spada L. Tract	1 platform 1 platform 1 platform
DEBRIS REMOVAL (Spada L. Shoreline)	9-1. thru 9-10.		Not considered necessary	
COARSE WOODY DEBRIS MANAGEMENT				
Retain CWD	FH and CT units	- Class 3,4,5 logs - 6-10 Class 1,2 logs - Mark logs w/unique habitat value	FH and CT units Salvage areas	- Class 3,4,5 logs - See Table 2 for Class 1 &2 logs - Logs not marked in FH and CT units - Marked logs for retention

ACTIVITY	SCHEDULED		COMPLETED	
MONITORING				
CWD pre-harvest Inventory	-	-	1992 & 1994 units	
CWD monitoring during harvest	FH and CT units	-	Post-harvest inventory: All units to date	
Nest Boxes	1 maint. visit annually 2 visits/breeding season		Done Done	
Nesting Islands	Annually for 3 yrs. post-installation		Done	
Osprey Platforms	Observe each spring		Done	
Revegetation Sites	1-17, 4-8, 8-3, 8-4 9-10.		Done Not done	
Buffer Zones	All harvest & comm'l thinning units		Done	
GTA's	All harvest & comm'l thinning units		Done	
Deer Forage	2 final harvest & 2 comm'l thin/5-yr pd.		All harvest units to date.	
REVEGETATION				
Replant, seed FH units;	1-3,1-9,1-15 3-1,4-5	79 + ac.	1-3,1-9,1-15 4-5,5-4	Done
Seed CT and roads			5-4, 5-5	Done
Test Plantings	9-10, (Spada L. drawdown zone)			
Tree/Shrub Plantings	1-17, 4-8 8-3,8-4	73 ac.	1-17, 4--8 8-4.	47 ac.
Grass Seeding	8-3.	40 ac.	8-3, 8-5	15 ac.
Fertilization	8-3, 8-4	65 ac.	8-3, 8-5	15 ac.
LAND EXCHANGE	Acquire additional land at Spada Lake; Williamson Crk City/DNR land exchange		Done Done	
REPORTING	Annual report, agency meeting		Done	

(a) WHMP schedule (WHMP p. 5-1) indicates activity in 5 other units (4-3,404,2-9,2-11,4-2) totaling 72 ac. in 1993. However, WHMP Figure 3.5 shows activity in these units in 1995, and detailed prescriptions (Sec.2.1) allow completion of work 10 yrs before or after this date.

(b) Sale layout completed.

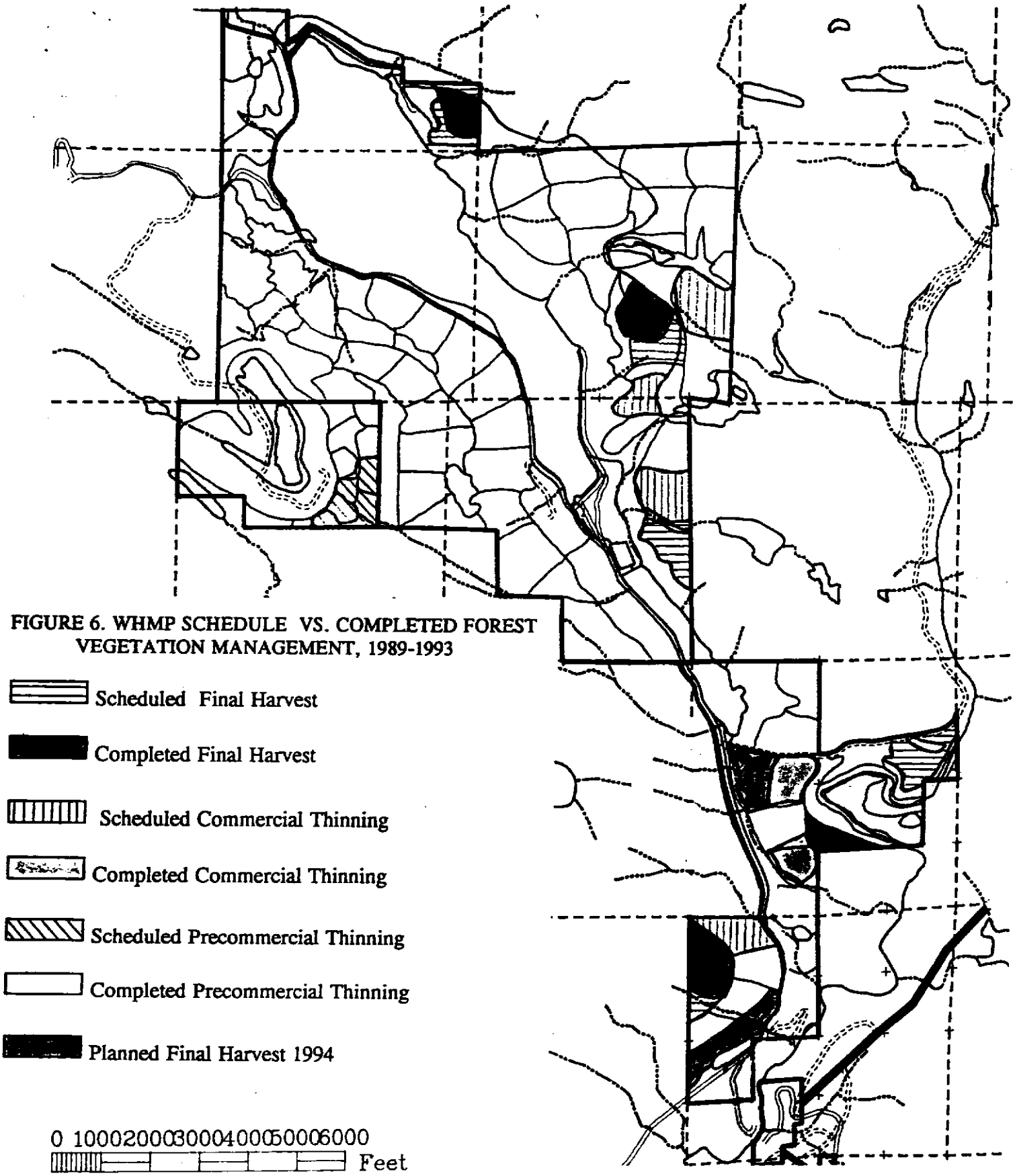


FIGURE 6. WHMP SCHEDULE VS. COMPLETED FOREST VEGETATION MANAGEMENT, 1989-1993

SNAG MANAGEMENT

The WHMP schedule for snag creation assumed that there would be few constraints during the first five to six years of implementation, and therefore planned for satisfying virtually all snag needs on the Lake Chaplain Tract during this period. In reality, the effort has been hampered by the need to acquire some of the land in question, (the City/DNR land exchange was not completed until 1991), identify the tract boundaries, identify and reconfigure harvest unit boundaries, and perform inventories of existing snags. Trees of adequate size for snag creation are very scarce in some of the stands. An additional complication is potential conflict between preserving snag trees, (both naturally-occurring and created) with safe timber harvest practices. The WHMP recognized the problem, stating that snags should not be created on harvest units within 20 years of the expected date of harvest. For these reasons, a different schedule of implementation was adopted, as described in the 1991 Annual Report, and discussed at the agency meeting in 1992. Targets for snag creation are now expressed as acres sampled rather than numbers of snags, recognizing that snags cannot be made in all areas initially for the reasons listed above. A schedule for sampling existing snags in the stands at Lake Chaplain and Lost Lake was presented in the 1991 and 1992 Annual Reports (summarized in Table 3 and Figure 3, this report). Snag creation, under the revised procedures, is done in association with timber sale setup, so that each harvest unit's snag requirements are satisfied promptly after harvest. In addition, as boundaries are identified for buffer zones, wetlands, OMA's and PMF's, existing snags are sampled and new ones created in these units. According to this schedule, sampling has fallen behind. Additional sampling will be done in 1994 and 1995, with the objective of catching up with the schedule by the end of 1995.

4.3 NEST STRUCTURES

All of the required nest structures have been installed. In 1990, two required nesting platforms were installed in Lost Lake. The third platform that was required in Lost Lake was installed, with one additional platform, in Lake Chaplain on an experimental basis, since loons have been observed there each year during the breeding season. Two required duck nest boxes were installed at Lost Lake in 1990, and six additional nest boxes were installed in Chaplain Marsh in 1993. Finally, as required, one osprey platform was installed at Lost Lake in 1990, and two at Spada Lake in 1992.

4.4 DEBRIS REMOVAL

The WHMP called for removal of logs and other woody debris on the Spada Lake shoreline if they hampered wildlife movement. Surveys have been conducted since the implementation of the WHMP began, and the amount of material has decreased. It no longer appears to be a significant problem for wildlife movement to and from the lake.

4.5 COARSE WOODY DEBRIS MANAGEMENT

The WHMP called for marking CWD with unique habitat value for retention during harvest, inventory of CWD to ensure that sufficient remained post-harvest, and the addition of fresh CWD while equipment was still present on the units in case more was needed. CWD has not been marked in harvest units because the City forester indicated that markings would not be visible once trees in the unit have been felled. However, CWD was marked for retention in salvage areas. Post-harvest inventories have been done on all harvest units, to date, and procedures were modified to include a pre-harvest inventory. However, the City and District have not agreed on the quantities and sizes that are required (see Section 3.7.2). No specific provisions for CWD retention were made for the first group (1991 sale) of harvest units because mutually acceptable inventory procedures and target sizes and quantities of CWD had not yet been developed.

The 1991 Annual Report (Section 3.10.2) stated that WHMP procedures for ensuring that an adequate supply of CWD is retained after harvest needed to be refined. A plan was described to re-sample the 1991 units post-harvest, and compare values obtained with values reported in the literature. Appropriate targets for CWD on managed units would then be identified. The existing inventory of CWD would be sampled pre-harvest, compared with the targets, and specific prescriptions would be developed for inclusion in timber harvest contracts to remedy any deficits.

Pending resolution of this issue, an interim measure for CWD retention was employed on the second group of harvest units (1992 sale), in which tops of snag trees and brush piles were left in the units. It was agreed that further discussion was necessary to resolve the issue, and proposals to manage the input of larger logs are currently under consideration.

4.6 MONITORING

All of the required monitoring has been performed, although the methods have been modified for evaluating deer forage availability and utilization, as described in the 1991 Annual Report. The new method compares unmanaged forest stands prior to management with the same units under WHMP-prescribed management. Measurements will be made over a 20-year period post-harvest to help fine-tune the WHMP's forest succession model, and to modify the management schedule if necessary. Forage availability is measured in terms of height and percent cover of shrub and forb species, and utilization is measured indirectly on the basis of pellet group counts.

ETATION

shrub plantings at the north end of Lake Chaplain (Stand 1-17), Chaplain Marsh (Stand 4-8) and the powerhouse (Stand 8-4) have been completed as described in consultant reports attached to the 1991 Annual Report. The plantings are consistent with the objectives of the WHMP, to provide screening between the Lake Chaplain Road and the lake and marsh, and to provide forage and shelter at all three sites. Trees and shrubs were not planted on the power pipeline right of way, based on the consultant's recommendation that a sod layer should be developed first to help improve the soil. Grass/forb seed has been applied annually to part of the ROW, with some improvement during the last year. The District has not done anything to revegetate the part of the ROW that was open to public access through mid-1993 because of excessive vehicle traffic and vandalism. With the addition of a gate on the access road, we will begin to apply seed and fertilizer to the remainder of the ROW.

4.8 LAND EXCHANGE

The District/USFS/DNR land exchange was completed in 1991. The District acquired 2,295 acres of upland and wetland habitat at Spada Lake and Williamson Creek. With the exception of recreation sites and areas used for hydroelectric operations, the land will be used for wildlife habitat mitigation as prescribed by the WHMP and the Spada Lake Tract Supplemental Plan.

The City/DNR land exchange was also 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.

4.9 REPORTING

An annual report has been prepared, reviewed by the agencies, and submitted to the FERC each year since implementation began in 1989.

5.0 WORK PLANNED FOR 1994

5.1 FOREST VEGETATION MANAGEMENT

Western red cedar will be planted in the 1992 final harvest unit at the rate of 25 seedlings/acre, and the salvage sale areas will be replanted with Douglas fir. Cottonwood whips will be planted in moist areas of 1991 harvest units; cottonwoods were planted in units 1991-1 and 1991-3 in 1992, but they appear not to have survived.

Planning and sale of two final harvest units in the Diversion Sale will be completed (Figure 2). Harvest dates will be determined later this year. Planning of the road system on the west side of Lake Chaplain, and layout of four or five harvest units scheduled in the WHMP for 1995, will be completed in 1994.

5.2 SNAG MÁNAGEMENT

Inventory of existing natural snags in the Lake Chaplain Tract will continue in 1994 in conjunction with planning harvest units. Planned inventory areas for 1994 are shown in Figure 3. These include areas previously scheduled but not yet completed. Snag trees will be created in the two 1992 thinning units and the two 1993 final harvest units, if they are harvested this year.

5.3 REVEGETATION

The areas that were previously planted (powerhouse site, Chaplain Marsh, north end of Lake Chaplain, pipeline right-of-way) will be monitored. Shrubs and trees will be replaced if there is excessive mortality. The pipeline right-of-way will be reseeded with a grass/forb seed mix similar to the ones used in 1992 and 1993. The area north of the new DNR gate will be seeded for the first time this year, using the same seed mix. Test plantings of wetland species will be done in the Spada Lake drawdown zone.

5.4 FLOATING NEST PLATFORMS

Floating nest platforms will be placed in Lake Chaplain and Lost Lake in March 1994. Since previous locations along the east edge of Lake Chaplain have not been used by nesting waterfowl, one platform in Lake Chaplain will be relocated to the west side of the lake, per Jean Cross's observations of loon activities in previous years. Observations will be made following procedures reported in the 1991 Annual Report. Two platforms will be placed in Lost Lake in 1994; if there is no use, they may be relocated to Spada Lake for the 1995 breeding season.

5.5 NEST BOXES AND OSPREY NEST PLATFORMS

Nest boxes and platforms will be monitored following the procedure in the 1991 Annual Report.

5.6 OTHER MONITORING

Monitoring of deer forage, snags and coarse woody debris will continue as described in this report and the WHMP. Forest plantations will be monitored for stocking density, species composition and animal damage.

5.7 SPADA LAKE TRACT SUPPLEMENTAL PLAN

The detailed planning period for the supplement will be 1995-2005. Additional plans will be written at later dates for future ten-year periods, as described in the last annual report. This year, field surveys necessary to develop specific forest vegetation management prescriptions will be completed for the first ten-year period. The supplement is expected to be completed and submitted to the FERC in late 1994 or early 1995.

6.0 SCHEDULE OF ACTIVITIES FOR 1994 TO 1995

Activities scheduled for the period 1994 to 1995 are reported, by management unit, in Table 4.

Table 4. Habitat Management Activity Schedule for 1994

Activity	Stand No. or Location	Quantity
Forest Vegetation Managment		
Final harvest Layout	4-3, 4-2, 2-11, 2-9	Approx. 100 ac.
Final Harvest Sale	4-5, 5-4	35 ac.
Snag Management		
Inventory	All planned FH units and in areas shown in Fig. 3.	TBD
Snag Creation	1992 CT units; Spada Lake Tract; other locations TBD	TBD
Revegetation		
Grass Seeding	8-3	40
Test Plantings	9 (Unit TBD)	TBD

7.0 AGENCY COORDINATION

The co-licensees submitted a draft version of this report to the following reviewing agencies: U.S. Fish and Wildlife Service, Washington Department of Wildlife, and the Tulalip Tribes. A copy was also sent to the Washington Department of Natural Resources. A meeting was held on March 8, 1994, to discuss progress to date and future plans for WHMP activities.

Minutes of the meeting are attached in Appendix B, with copies of letters exchanged by the District and agencies regarding the draft report and meeting.

APPENDIX A

WHMP MANAGEMENT STAND MAPS

TABLE OF CONTENTS FOR APPENDIX A

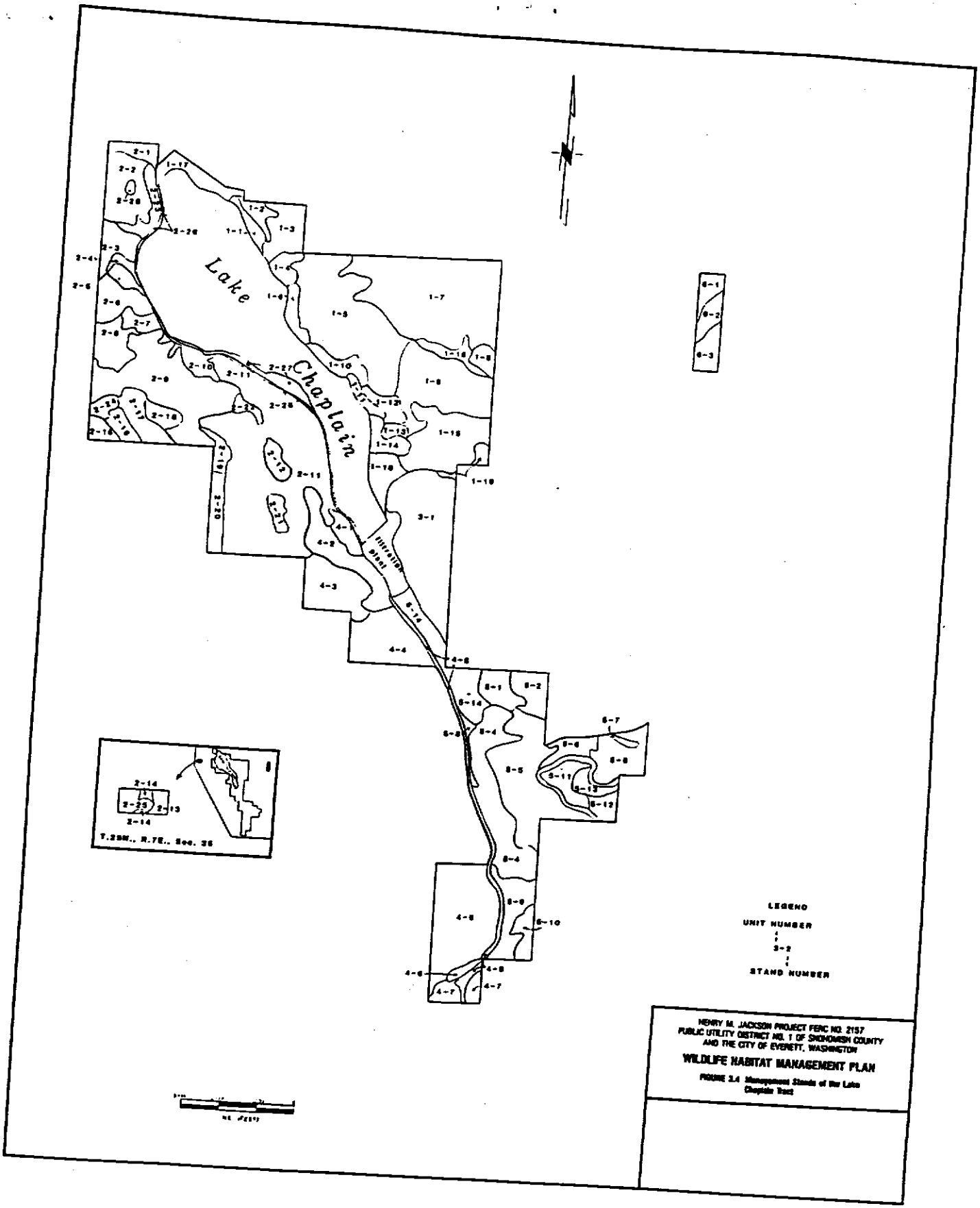
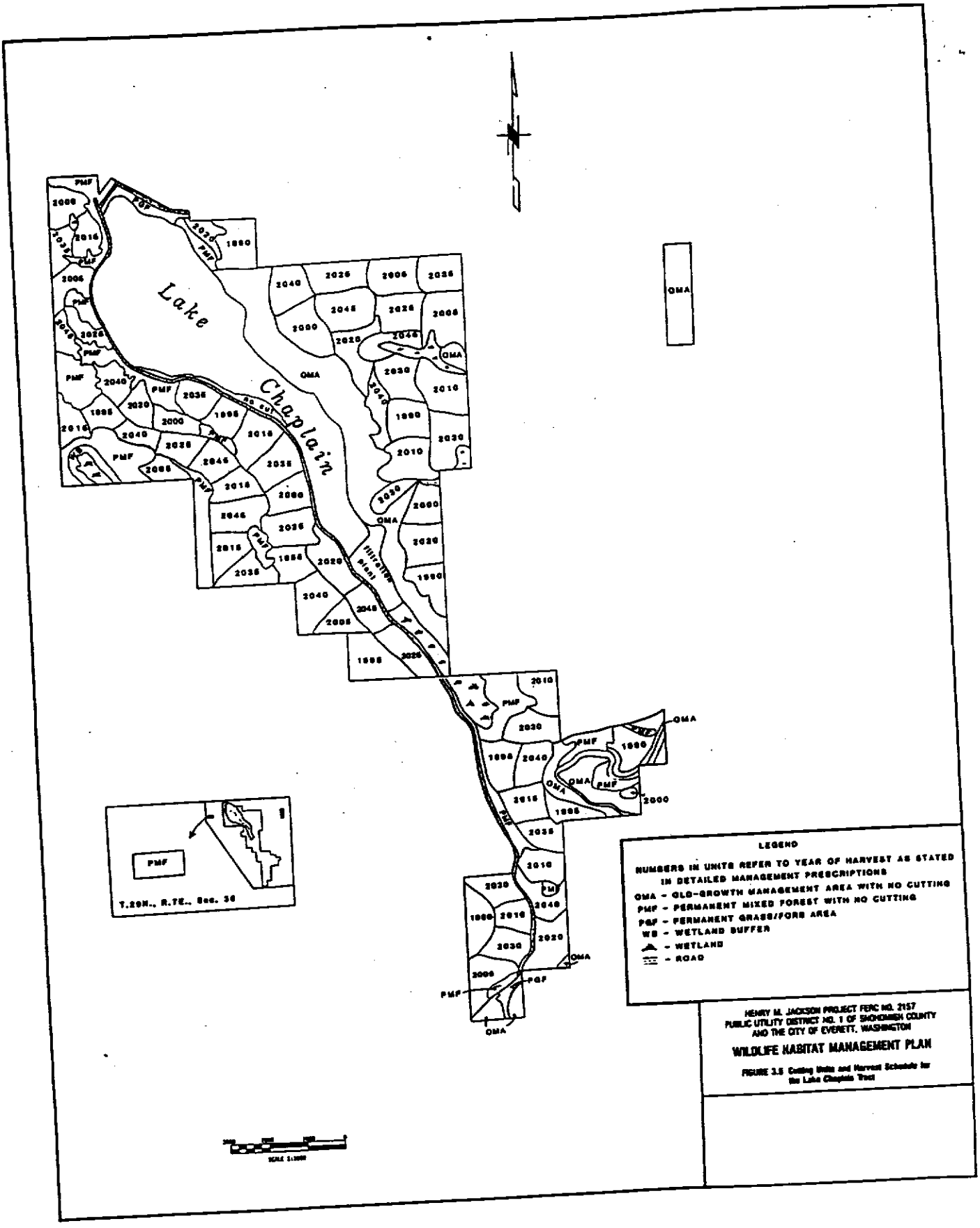


FIGURE 3.4 Management Stands of the Lake Chaplain Tract


Lake Chaplain
PMF
PGF
OMA
WB
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
1995
1990
1985
1980
Filtration Plant
T.29N., R.7E., Sec. 36
LEGEND
NUMBERS IN UNITS REFER TO YEAR OF HARVEST AS STATED IN DETAILED MANAGEMENT PRESCRIPTIONS
OMA - OLD-GROWTH MANAGEMENT AREA WITH NO CUTTING
PMF - PERMANENT MIXED FOREST WITH NO CUTTING
PGF - PERMANENT GRASS/FORB AREA
WB - WETLAND BUFFER
- WETLAND
- ROAD
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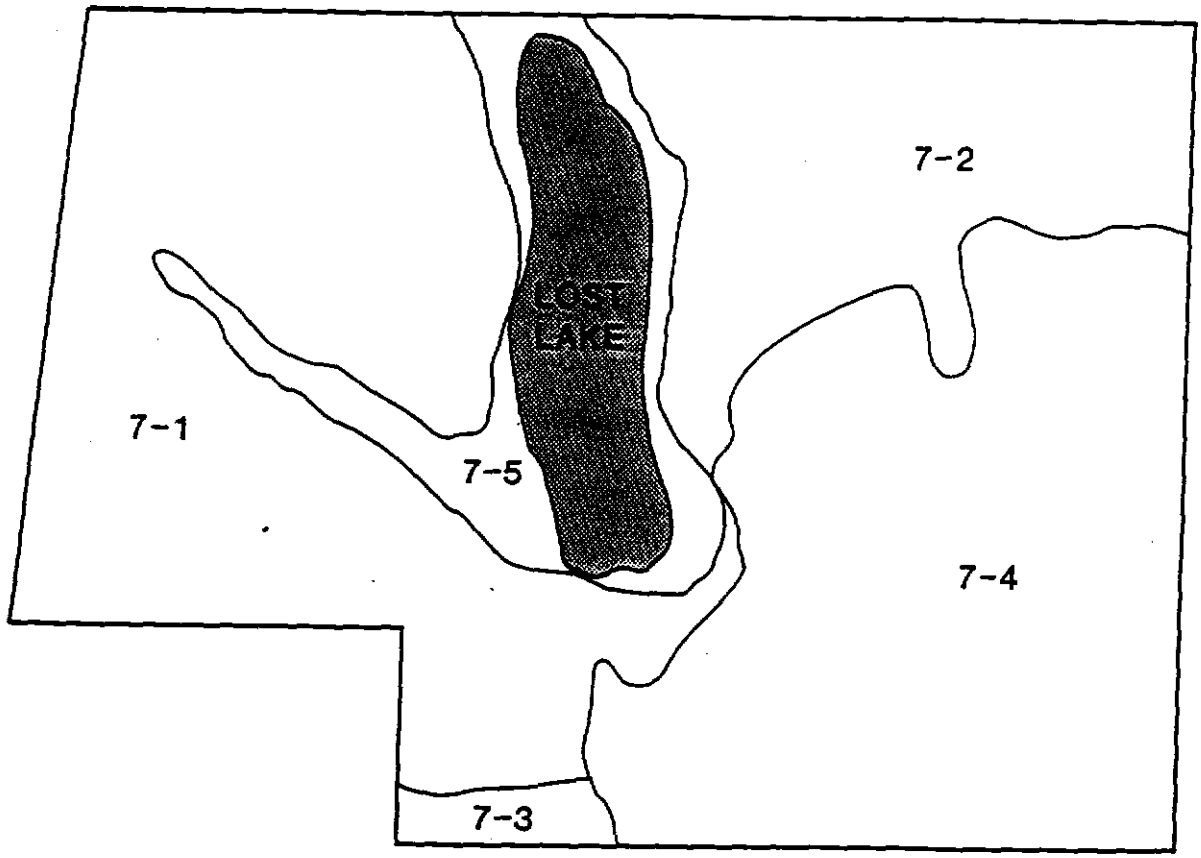
PUBLIC UTILITY DISTRICT NO. 1 OF SNOHOMISH COUNTY
AND THE CITY OF EVERETT, WASHINGTON
WILDLIFE HABITAT MANAGEMENT PLAN
FIGURE 3.5 Cutting Units and Harvest Schedule for the Lake Chaplain Tract



NORTH

0 500 1000 1500 FEET

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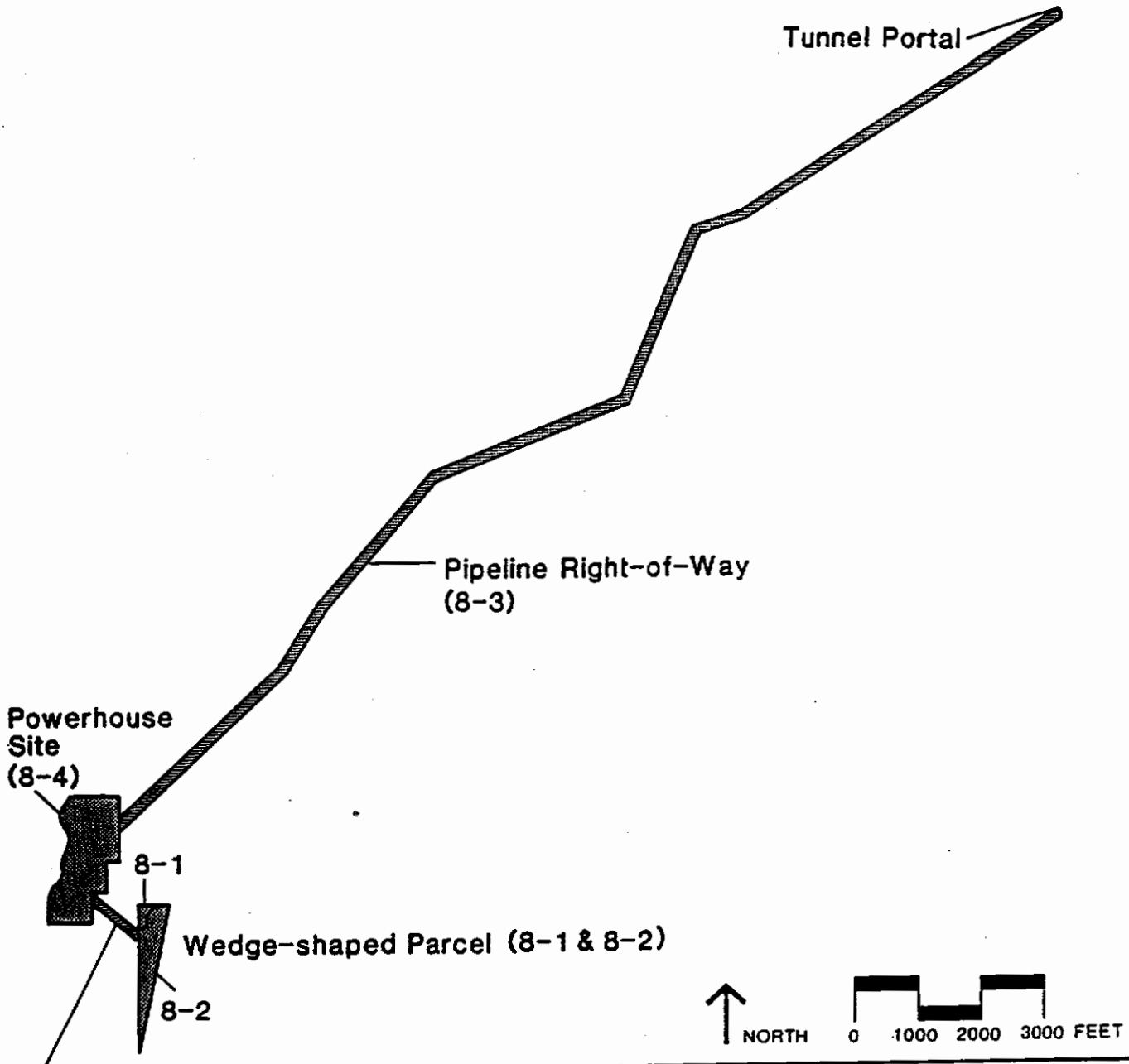
WILDLIFE HABITAT MANAGEMENT PLAN

Figure 3.6 Management stands of the Lost Lake Tract



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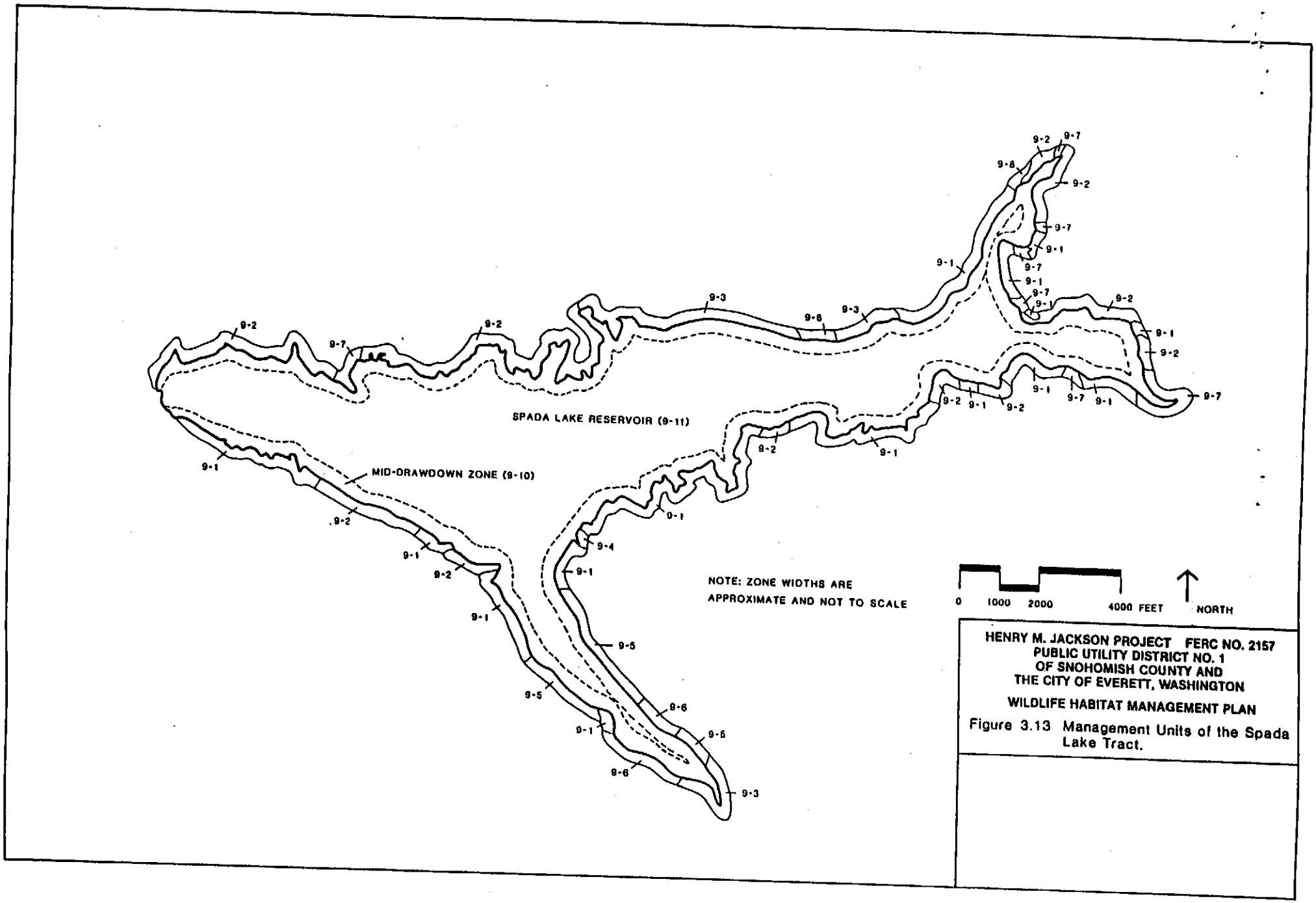
THE CITY OF EVERETT, WASHINGTON

WILDLIFE HABITAT MANAGEMENT PLAN

Figure 3.8 Management stands of the Project Facility Lands.



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THE CITY OF EVERETT, WASHINGTON

WILDLIFE HABITAT MANAGEMENT PLAN

Figure 3.13 Management Units of the Spada Lake Tract.

APPENDIX B

AGENCY COORDINATION

WHMP Annual Rept. Meeting 3/8/94

Name	Phone #	Representing:
Karen Bedrossian	347-4374	PUD
Swill Ging	753-9440	US FISH & WILDL. SERV.
Bonnie Tannenbaum	347-4319	PUD
Don Farwell	259-8817	City of Everett
Kathie Gayner	259-8949	
Bruce Meaker	347-4322	PUD
R. GARY FENGMAN	775-1311 x122	WDFW
Roy G. Mulligan	259-8884	City of Everett
CHUCK LAUCK	856-0083	DNR
MURRAY SCHUH	347-4369	PUD
MIKE SCHUTT	347-4494	PUD
Diana Woge	347-4304	PUD
Dan Thompson	259-8860	City of Everett