

Final
**Recreation Needs Analysis Report
for
Energy Northwest's
Packwood Lake Hydroelectric Project
FERC No. 2244
Lewis County, Washington**

Submitted to



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Deborah Howe has a B.S. in Environmental Sciences and Planning. She has nearly 25 years of experience in hydroelectric project licensing. Ms. Howe was responsible for recreation surveys, analysis and preparation of the Recreation Resources Study for the Packwood Lake Hydroelectric Project. She has conducted recreation studies for numerous hydroelectric projects throughout the Pacific Northwest and Alaska. Most recently she was responsible for recreation studies as part of the relicensing efforts for Chelan County Public Utility District's Lake Chelan and Rocky Reach Hydroelectric Projects, and Pend Oreille County Public Utility District's Box Canyon Hydroelectric Project. Her work on these projects included recreation study planning, on-site surveys, observational counts, traffic counts, recreation inventory, capacity analysis, needs assessment, recreation management planning, and stakeholder consultation.

ACRONYMS, ABBREVIATIONS AND DEFINITIONS

ATV or ORV	All Terrain Vehicle or Off-Road Vehicle
Avg	Average
CFR	Code of Federal Regulations
EN	Energy Northwest
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
FS Rd	Forest Service Road
FSM	Forest Service Manual
GPNF or Forest Service	U.S.D.A. Forest Service, Gifford Pinchot National Forest
IAC	Interagency Committee for Outdoor Recreation
KW	Kilowatt
LRMP	GPNF Land and Resource Management Plan
MSL	Mean Sea Level
PAOT	Persons at One Time
PDPY	Person Days Per Year
Project	Packwood Lake Hydroelectric Project
PWL	Packwood Lake
Recreation Day(s)	= (party size x overnights) + (1 x party size)
Report	Recreation Needs Analysis Report
RM	River Mile
SCORP	State Comprehensive Outdoor Recreation Plan
TH	Packwood Lake Trailhead
Wilderness	Goats Rock Wilderness

1.0 INTRODUCTION

Energy Northwest's Packwood Lake Hydroelectric Project, FERC No. 2244, received its initial license in 1960, and is in the process of obtaining a new license for the Project. This Recreation Needs Analysis follows the Recreation Resources Study conducted in 2006/2007 (Howe, 2007), and is one of a number of other aquatic, terrestrial, cultural and engineering studies that are being conducted as part of the relicensing process.

The Project is located in southwest Washington State, near the unincorporated community of Packwood (Figure 1). The majority of the Project is located in the Gifford Pinchot National Forest (GPNF), and the lands surrounding Packwood Lake are primarily located in the Goat Rocks Wilderness Area (Figure 2). The Project consists of an intake canal, a concrete drop structure (dam) and intake building on Lake Creek located about 424 feet downstream from the outlet of Packwood Lake, a 21,691-foot system of concrete pipe and tunnels, a 5,621-foot penstock, a surge tank, and powerhouse with a 26,125 KW turbine generator.

The source of water for the Project, Packwood Lake, is a lake situated at an elevation of approximately 2,857 feet above mean sea level (MSL), about 1,800 feet above the powerhouse. Packwood Lake is maintained at approximate elevation 2,857 feet MSL from May 1 through September 15. During the remainder of the year, the existing FERC license allows lowering the lake level not more than eight feet below the summer lake level down to an elevation of 2,849 feet MSL. Water discharged from the Project is released to the Cowlitz River via a tailrace channel. Power from the Project is delivered over an 8,009-foot 69 KV transmission line to the Packwood substation.

During Project construction in the 1960s, Energy Northwest constructed approximately 3.5 miles of permanent road (FS Rd 1260) to Forest Service standards for public use, and constructed a new parking lot located at the end of the access road to accommodate a maximum of 50 cars and five trailers. Energy Northwest also reconstructed a hiking trail (part of Packwood Lake Trail #78) to Forest Service standards for public non-motorized recreation access from the parking lot to the Lake and Wilderness areas beyond.

The Project access road (Pipeline Road, FS Rd 1260-066) and connecting Trail #74 provide motorized public access to Packwood Lake, and is Energy Northwest's primary access for operation and maintenance of the hydroelectric diversion dam at the lake's outlet. Energy Northwest uses Latch Road (FS Rd 1262) and the one mile connecting Trail #74 to access the hydroelectric diversion dam mainly in the months when snow makes access difficult on the Pipeline Road.

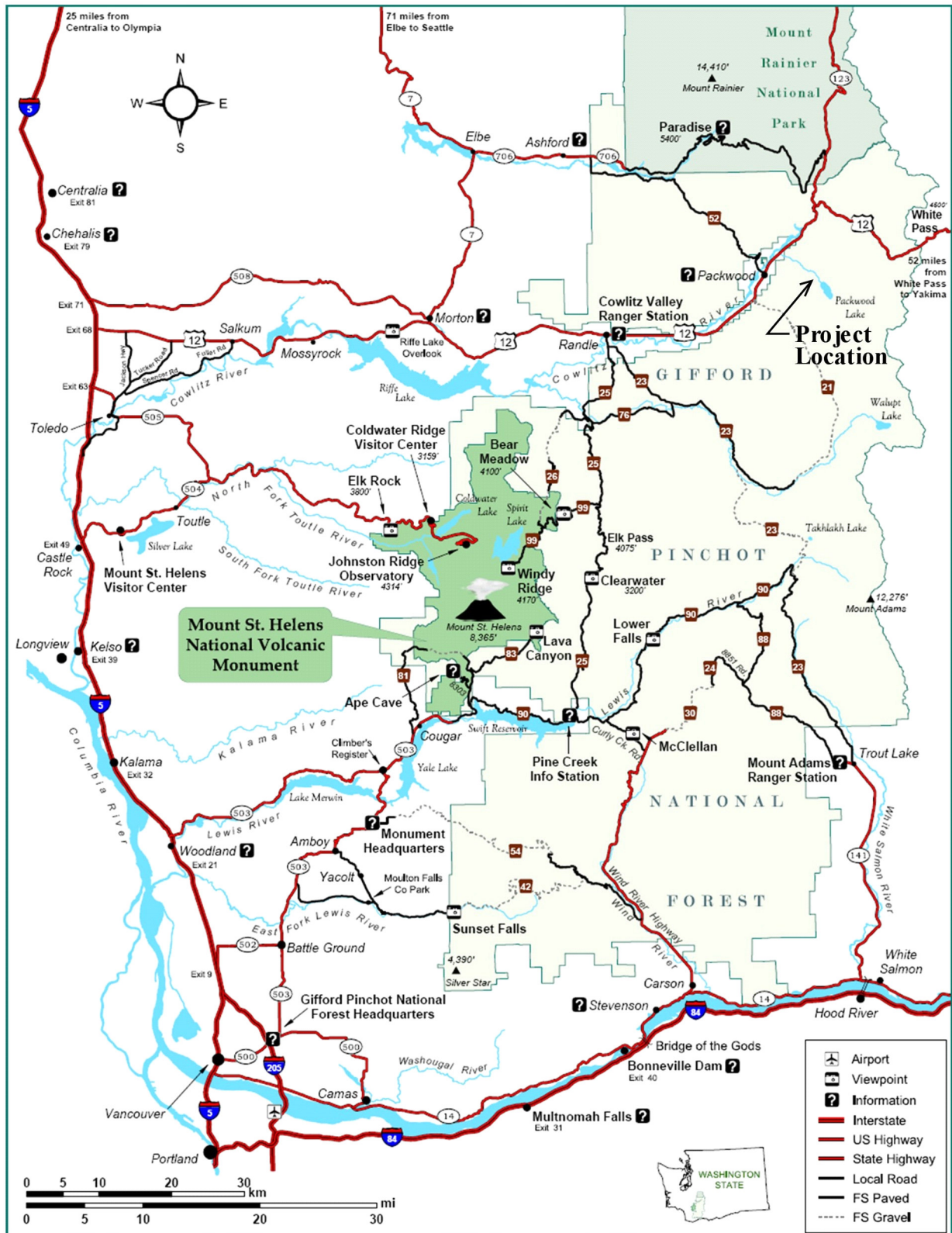


Figure 1. Project Location

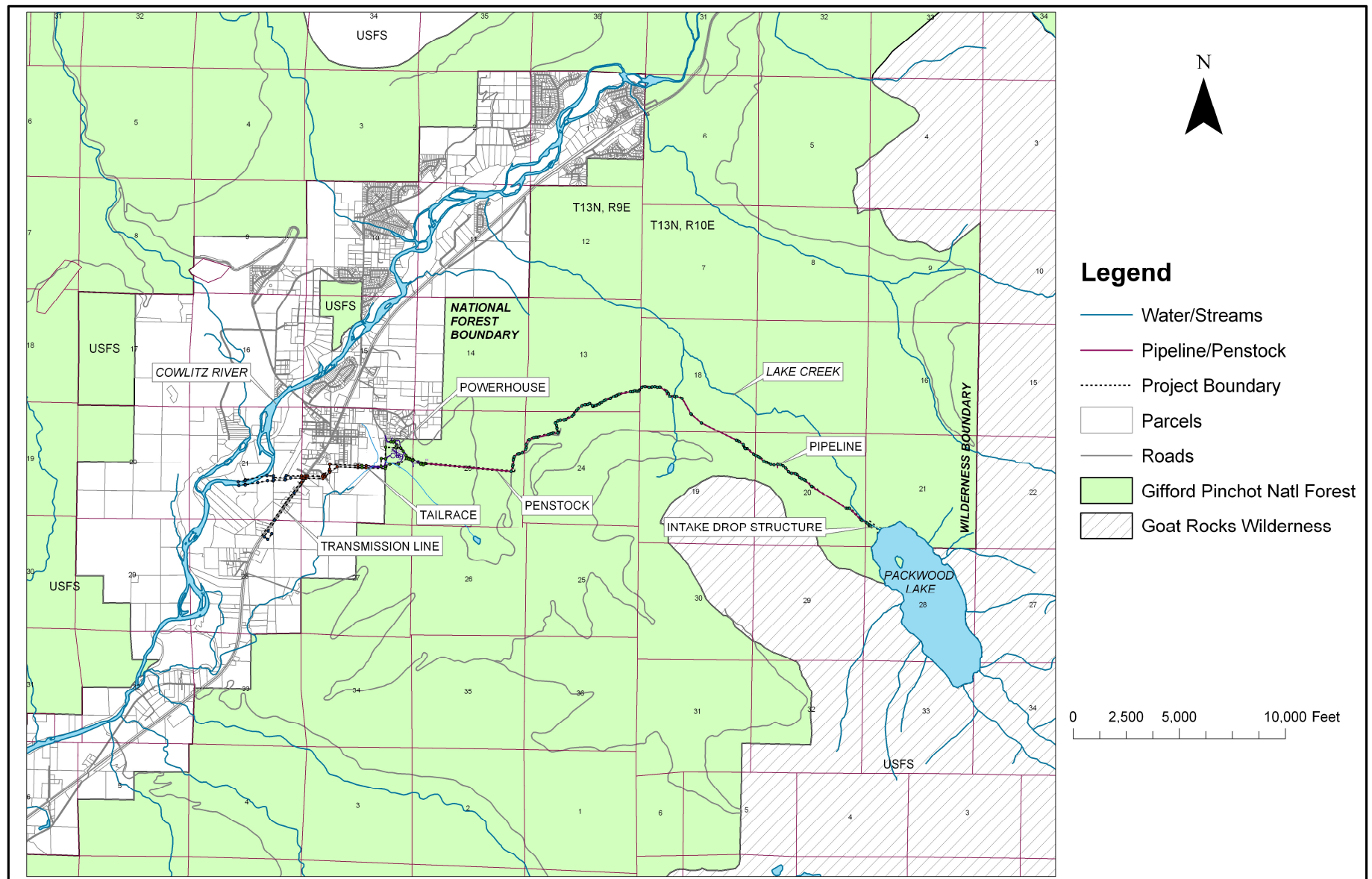


Figure 2. GPNF Boundaries

Packwood Lake existed before development of hydroelectric facilities; the Project did not create the lake or the past and current recreational opportunities within the National Forest and wilderness lands. Historically Packwood Lake has been extremely popular for fishing, boating and camping. Recreation use at Packwood Lake was greatest prior to 1992. A public campground at Packwood Lake was first established by the Forest Service around 1917, and in 1921 a tent camp resort was developed near the lake outlet. From 1921 to 1991, the Forest Service oversaw a permitted resort at Packwood Lake. In 1936, a two-story cedar lodge complete with store, kitchen, and dining area was constructed; followed by a floating dock. Eleven small wood cabins were built and rented to overnight guests. In 1972, the main lodge, utility room, and the boiler building were damaged by fire. Most of the cabins were removed in 1974. The boat concession, with boathouse and dock, continued until 1991. The remaining structures were removed by the Forest Service in the 1990s (Bedell, 2004).

After the Forest Service permitted resort and facilities were removed, visitor use decreased significantly. Prior to closing down the Forest Service permitted resort in 1992, visitors use at Packwood Lake was estimated to be an average of about 60 people per day during the summer months with up to 300 people per day on weekends (Bedell, 2004). Based on the average number of visitors per day, prior to 1992, it is estimated that 6060 people visited Packwood Lake during the summer months. Based on surveys conducted in 2006, an estimated average of less than 30 people per day visited Packwood Lake during the peak-season, with an estimated 50 people per day on weekends (Howe, 2007). Based on the 2006 surveys, an estimated 2,535 people visited Packwood Lake during the summer months (peak-season).

The recreation needs analysis consists of 11 sections. Sections 2, 3 and 4 describe the study area, summarize the goals and objectives of the analysis, and the methods used in the analysis. The current recreation supply is reviewed in Section 5 and existing recreation use in the Project area is outlined in Section 6.

Section 7 reviews available information regarding recreation demand and trends that might influence future recreation use in the Project area. National and state trends and projections are reviewed as well as historic trends and potential economic influences. Potential recreation growth specific to the Packwood Lake area is analyzed using population projections as well as recreation activity projections, and conclusions regarding the applicability of methods are made based on variables used and historic trends. Section 8 reviews Forest Service, State and local plans and policies that guide recreation demand and needs in the Project area.

Section 9 pulls together information summarized in sections 5, 6, 7, and 8 to analyze the current and future recreation capacity in the Project area. Section 10 summarizes recreation needs and options based on the previous information, and reviews the ability of the Project area to accommodate future needs and the suitability of barrier free access. Section 11 summarizes results and conclusions from the analysis.

2.0 STUDY AREA

The proposed study area, for this analysis includes lands and waters within and adjacent to the Project boundary where recreation activities occur. More specifically, the study area consists of

Packwood Lake and adjacent shoreline; the parking lot at the end of Forest Service Road 1260 and Trails #74, #78 and #81 where they provide access to Packwood Lake; and Lake Creek near Old Highway 12 (Figure 3 below). The needs analysis will evaluate existing and potential recreation activities and resources within this area.

3.0 GOALS AND OBJECTIVES

The goals of the recreation needs analysis are to evaluate recreation use and demands and identify recreation needs and associated options in the Project area that recreation resource managers should strive to address. The needs analysis does not assign specific responsibility for implementing potential actions.

The objective of the needs analysis is to provide information for Energy Northwest, as well as other recreation resource managers and providers, to use in making decisions regarding the management, planning, design and construction of recreation resources in the Project area.

4.0 METHODOLOGY

The Recreation Needs Analysis involves a number of interrelated factors, including an evaluation of the existing recreation supply and use in the Project area, and recreation demand and needs. Recreation supply, use, and demand is based on information obtained in the Recreation Resource Study (Howe 2007), including the inventory of existing recreation facilities and dispersed sites, current visitor use and activity participation, and visitor comments. Additional information, including population and demographic data, historical recreation use data, and economic influences (i.e., increases in gas prices) is used to analyze potential recreation growth and recreation demands and trends in the Project area. Existing national, regional, and local plans and policies are reviewed to provide specific information relating to recreation demands and needs applicable to the Project area. The Forest Service Land and Resource Management Plan (LRMP) and associated land management prescriptions provide direction regarding recreation demand, future conditions, and the ability of the Project area to accommodate these demands. The Interagency Committee for Outdoor Recreation (IAC) State Comprehensive Outdoor Recreation Plan (SCORP) demand and needs analyses estimates of future recreation participation are used to help determine future recreation demands and needs applicable to the Project area. Lewis County's Comprehensive Plan goals and policies are also reviewed to provide further information regarding demands in the Project area.

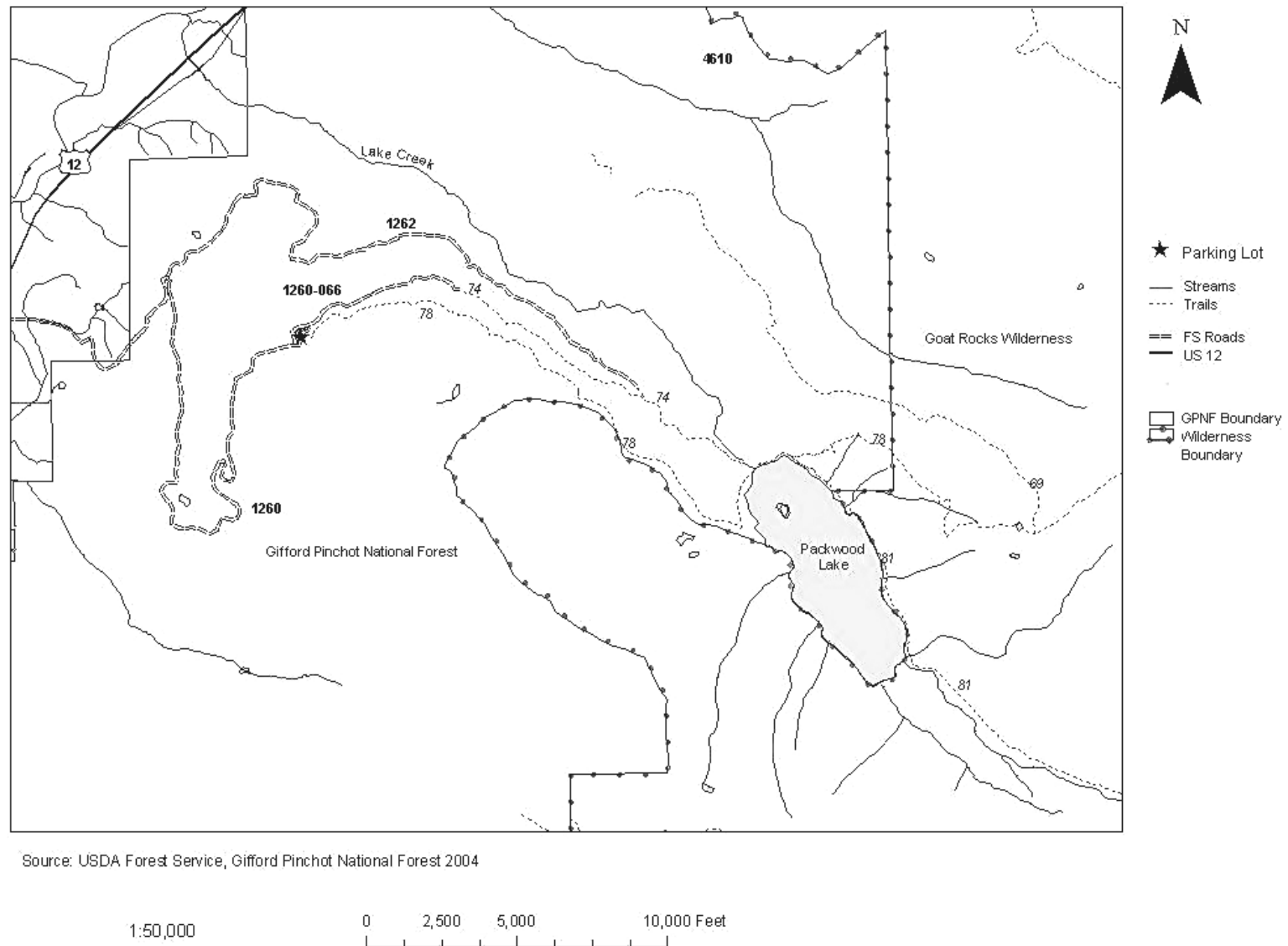


Figure 3. Packwood Lake Trails

The existing and future recreation capacity (supply) of the Packwood Lake area is evaluated based on current recreation use at Packwood Lake and an analysis of the capacity and suitability based on current and future ecological, social, physical, and managerial constraints.

Ultimately, current and future recreation needs, and issues and options related to recreation needs in the Project area are determined based on a synthesis and analysis of recreation supply, use, and demand in the Project area. The ability of the Project area to accommodate recreation needs is based on the opportunities and constraints of the resources in the Project area. Future options associated with recreation needs are reviewed based on potential changes in supply and demand, potential growth, trends, ecological constraints, visitor perceptions of recreation crowding and needs, and resource management prescriptions. The suitability and need to provide barrier-free access is also analyzed utilizing Forest service guidelines.

5.0 EXISTING RECREATION SUPPLY

Recreation use near the Project occurs within Forest Service lands near the upper portions of the Project around Packwood Lake. Public access to Packwood Lake is available via the motorized project access road and connecting trail maintained by Energy Northwest (Pipeline Rd/Trail #74) and a non-motorized trail maintained by the Cowlitz Valley Ranger District (Packwood Lake Trail #78). Both routes to Packwood Lake are 4.5 miles long and are accessed from the parking lot at the end of Snyder Road (FS Rd 1260). The Pipeline Rd/Trail #74 route ends at the lakeshore. Trail #78 goes to the lakeshore, then continues across a bridge at the lake outlet and continues to Mosquito Lake and Lost Lake. Trail #81 veers off from Trail #78 and continues along the lakeshore, and along Upper Lake Creek (Figure 3). The Forest Service generally maintains and clears trails #78 and #81 once a year and conducts other maintenance in the Packwood Lake area on an as needed, as time permits, basis.

Latch Road (FS Rd 1262) and the connecting Trail #74 also provide access to Packwood Lake (Figure 3). A locked gate is located on FS Rd 1262, approximately 2.4 miles from the junction of Snyder Road and there is no public vehicular traffic behind the gate. The Forest Service maintains Latch Road. Forest Service trail crews generally use this road for working on trails in the Packwood Lake area. A few hunters may use the road up to the gate in the fall, but it is not believed that many visitors use this route to access Packwood Lake.

An inventory of recreation facilities and dispersed sites at the Packwood Lake trailhead and around Packwood Lake was conducted in 2006 (Howe, 2007). A paved parking lot, for approximately 30 to 45 vehicles, and the Packwood Lake trailhead (Trail #78) are located at the end of FS Rd 1260. A well-maintained single vault toilet is located at the parking lot. Another toilet that is not maintained is located within the trees north of the trailhead. A trailhead bulletin and routed wood trail map are located at the trailhead near the beginning of the Packwood Lake Trail #78.

An unpaved area for ATV(ORV)/motorized vehicle parking is located near Packwood Lake, at the end of Trail #74. The Project's intake and drop structure (dam) and associated control building are located approximately 424 feet downstream from the outlet of Packwood Lake.

A Forest Service guard station is located along Trail #78 where the trail drops down to Packwood Lake, and an historic ranger station is located along Trail #78, near the Lake Creek foot bridge. An old well is located about 100 feet west of the historic ranger station, which because of unacceptable water tests has been dismantled to prevent public use. Three toilets/outhouses, which are unusable and/or in poor condition, are located within the Forest Service non-Wilderness area along Packwood Lake.

A total of 18 dispersed camp sites and 2 dispersed day-use only sites were identified in 2006 near the non-Wilderness shoreline of Packwood Lake (Howe, 2007). Within the Wilderness portion of Packwood Lake, 23 Forest Service monitored sites are documented. The majority of these dispersed sites are out of compliance with Forest Service standards. User developed fire pits at dispersed sites, and connector trails between dispersed sites have been documented.

6.0 EXISTING RECREATION USE

6.1 Packwood Lake Visitor Data

For the Recreation Resource Study (Howe, 2007) numerous types of data were collected, including Forest Service Wilderness data for 2005 and 2006, survey data collected by Forest Service workers in August/early September 2005 at the Packwood Lake Historical Ranger Station, and surveys conducted at the Packwood Lake parking lot in 2006.

Wilderness data was collected from visitors entering the Wilderness at two Permit Stations near Packwood Lake; one on Trail #78 and another on Trail #81. It is unlikely that all visitors entering the Wilderness completed the permit forms and were counted. The surveys conducted in 2005 at the historic ranger station only included days in August and early September. Surveys conducted in 2006 at the Packwood Lake parking lot were conducted from 8:00 am to 3:00 pm and included all visitors going to and coming from Packwood Lake. Recreation use estimates presented and analyzed in this study were taken from the 2006 surveys only, for the following reasons:

- The Wilderness data did not provide information regarding recreation use at Packwood Lake, therefore comparisons and/averaging of the Wilderness data and the 2006 survey data was not possible. The 2005 Wilderness data showed 392 people entered the wilderness in peak-season 2005, and 398 people entered the Wilderness in 2006. Review of this data indicated that the number of people visiting the Project area was likely similar in 2005 and 2006, confirming the validity of using the 2006 data. The 2006 surveys at Packwood Lake showed significantly more visitors going to Packwood Lake (total 2535 in peak-season) than the 2005 and 2006 Wilderness data indicated, which confirmed that the 2006 surveys of visitors to Packwood Lake provided reasonable estimates. Similar conclusions were drawn based on comparisons with the off-season visitor use estimates.
- The 2005 surveys were only conducted during August/early September 2005. Comparisons with the 2006 survey data during the same August/early September time period showed an estimated average of 22 people per day in 2005 and 27 people per day in 2006 visited

Packwood Lake, confirming that the 2006 survey day was reasonable. Vehicle counts taken at the Packwood Lake trailhead parking lot, multiplied by the estimated average number of people per vehicle, resulted in average daily visitor numbers similar to the visitor estimates based on the 2006 surveys, thereby confirming the survey-based estimated visitor use data used in this Needs Analysis.

- The 2005 survey was conducted at the historic ranger station at Packwood Lake, while the 2006 survey was conducted at the Packwood Lake trailhead parking lot. Survey responses, regarding types of activities and visitor demographics were similar for both the 2005 and 2006 surveys. However, visitor responses from the 2005 survey, regarding the Packwood Lake area, were mainly related to the historic ranger station, while the comments received from the 2006 survey respondents related to the entire area around Packwood Lake.

The adequacy of the 2006 survey coverage for specific analytical purposes depends in part on the size of the survey sample relative to the size of the relevant total user population (Gregoire and Buhyoff, 1999). By design, the survey sample sizes were relatively large during the peak-season weekends and holidays when visitor use is the greatest, while relatively small on weekdays, as summarized below:

Weekend/Holiday Survey Days:

- Peak-season – 10 out of a total of 30 weekend days (>33%); 3 out of 3 Holidays (100%)
- Spring off-season – 2 out of a total of 8 weekend days (25%)
- Fall off-season – 6 out of a total of 24 weekend days (25%)

Weekday Survey Days:

- Peak-season – 6 out of a total of 68 weekdays (<9%)
- Spring off-season – 2 out of a total of 20 weekdays (10%)
- Fall off-season – 3 out of a total of 63 weekdays (<5%)

Due to the heavy rains, snow and flooding during the fall season, some survey days planned in the fall were cancelled; therefore, the sample size is smaller during this time period.

Based on the estimated population size, the 2006 survey sample size is statistically valid with a confidence interval of 2.99 percent, at a 95 percent confidence level (Table 1).

Table 1. 2006 Survey Confidence Interval

2006 Survey Sample Size	Estimated Population Size	Confidence Interval	Confidence Level
806	3237	+/- 2.99	95%

Statistical computation of the survey data can also be used to determine variability of visitor use (Thomas and Nelson, 1996). The variability of the 2006 survey data, by season and day of week is shown on Table 2 for the average number of people per day that went to Packwood Lake from the Packwood Lake trailhead parking lot. As demonstrated, the confidence intervals at 95

percent confidence level are rather wide, reflecting the variability in the number of visitors during each survey period. Table 3 demonstrates the range in the number of daily visitors to Packwood Lake per season and day of week. Review of survey data demonstrated that several very large organized groups visit Packwood Lake, which has a significant impact on the number of visitors on those survey days. For instance, out of 185 groups in the peak-season, there were one (1) group of 40 people and six (6) groups of between 11 and 18 people; meanwhile, the rest of the groups (178) had an average of 2.5 people in their groups. During the off-season (spring and fall), some survey days had zero visitors resulting in greater variability, and in the fall there were also a couple of very large groups, versus few visitors on other survey days, which results in the variability shown on Tables 2 and 3.

Table 2. 2006 Survey Variability – Average # of People/Day

Survey Period	Mean	Standard Deviation	95% CI for Mean
Peak-Season:			
Weekends/Holiday	46	24.5	+/- 13
Weekdays	14	5.5	+/- 4
Spring-Season:			
Weekends	3.0	4	+/- 5
Weekdays	4.5	2	+/- 2.5
Fall-Season:			
Weekends	17.5	16	+/- 13
Weekdays	2.5	3	+/- 3

Table 3. Range in Number of Daily Visitors to Packwood Lake (2006)

Peak – Season		Spring – Season		Fall – Season	
<i>Weekends/Holidays</i>	<i>Weekdays</i>	<i>Weekends</i>	<i>Weekdays</i>	<i>Weekends</i>	<i>Weekdays</i>
14 – 88 (7/16)	7 – 24 (7/27)	0 – 6 (5/6)	3 – 6 (5/18)	3 – 46 (10/7)	0 – 7 (9/19)

¹ Survey dates of highest number of visitors shown in *(italics)*

The variability is also related to weather; the 2006 survey showed significantly more visitors at Packwood Lake during excellent and decent weather conditions.

Recreation Days are presented in the Recreation Resources Study Report (Howe, 2007). Recreation Days (or average recreation day) were calculated based on the number of daily visitors that went to Packwood Lake from the Packwood Lake trailhead parking lot, as shown on Tables 2 and 3 above, multiplied by the number of nights and days spent at Packwood Lake. Table 4 shows the average (mean) recreation day as well as the variability in recreation days with a 95 percent confidence level. The variability for recreation days shown on Table 4 is wide, not only due to the variability in the number of visitors surveyed, but also because of the number of overnights spent in the area. Visitors documented on survey days spent between one (1) and 18 nights during their visit to Packwood Lake.

Table 4. 2006 Survey Variability – Average Recreation Day

Survey Period	Mean	Standard Deviation	95% CI for Mean
Peak-Season:			
Weekends/Holiday	87.5	65	+/- 35
Weekdays	29	18	+/- 14
Spring-Season:			
Weekends	3	4	+/- 5
Weekdays	5.5	2	+/- 3
Fall-Season:			
Weekends	32	28	+/- 22
Weekdays	4	7	+/- 7
¹ Recreation days (Person Days Per Year) is defined as (party size x overnights) + (1 x party size)			

In addition to the estimated recreation days, other information collected in the 2006 surveys that will be used in this Needs Analysis includes vehicle use of the parking lot and use on trails (Pipeline Road/Trial #74 and Trail #78), type of activity visitors participated in during their visit, visitors' perceptions regarding their visit to Packwood Lake, and visitor comments regarding improvements or amenities at Packwood Lake.

6.2 Visitor Use

6.2.1 Summary of Packwood Lake Visitors

The majority of annual visits to Packwood Lake occur in the peak-season (Memorial Day weekend to Labor Day) and nearly four times more people visit Packwood Lake during weekends than during weekdays. Based on surveys conducted in 2006 (Howe, 2007), an estimated average of less than 30 people per day visited Packwood Lake during the peak-season, with an estimated average of 46 people per day on weekends (Howe, 2007). A total estimated 2,535 people visited Packwood Lake during the peak-season (Memorial Day weekend to Labor Day). An estimated 114 people in the spring off-season (April-May) and 588 people in the fall off-season (September-November) went to Packwood Lake. The total estimated recreation days at Packwood Lake is estimated as 5080 during the peak-season, 134 during the spring off-season, and 1024 during the fall off-season. Very few people are known to visit Packwood Lake during the winter season (December through March).

Approximately 54 percent of peak-season visitors to Packwood Lake were day users and 46 percent were overnight users, while recreation days (including nights and days spent by each visitor) were 73 percent overnight visitors and 27 percent day-use visitors. The average peak-use weekend (July 4th weekend and other holiday weekends) based on 2006 data showed an estimated average of 35 recreation days for day use and 40 recreation days for overnight use.

Spring off-season visitors to Packwood Lake consisted of 83 percent day users and 17 percent overnight users, while estimates of recreation days were 70 percent day users and 30 percent overnight users. Fall off-season visitors to Packwood Lake consisted of 40 percent day users and 60 percent overnight users, while recreation days were 23 percent day users and 77 percent overnight users.

Based on the 2006 survey data, the annual total at Packwood Lake is estimated as 1,694 recreation days for day use and 4,543 recreation days for overnight use.

Based on surveys, the majority of Packwood Lake visitors went to the non-Wilderness portion of Packwood Lake versus the Wilderness portion of Packwood Lake

Most visitors to the Packwood Lake area come from Western Washington, with most from the local area, specifically Lewis and Pierce Counties. Many visitors also come from King and Thurston Counties. Some visitors come from eastern Washington, mostly Yakima County.

Recreation Days

For this needs analysis, estimates of “recreation days” (same as Forest Service Person Days Per Year) were used to analyze current and future visitor use and capacity at Packwood Lake to conform with the Forest Service’s capacity standards, which utilize PDPY (Person Days Per Year) based on a People at One Time (PAOT) daily capacity (Forest Service, 1998). The intent of the recreation day is to measure the total number of people in the area each day.

Table 5 provides estimates of average number of people per recreation days at Packwood Lake by season and day of week. Tables 6, 7, and 8 provide estimates of recreation days by day use and overnight use and by area (non-Wilderness and Wilderness) along Packwood Lake. Due to the inherent variability of visitor use, recreation days for the low, average (mean), and high end of the confidence interval at a 95 percent confidence level are shown.

Table 5. Average Estimates of Packwood Lake (PWL) Visitor Use

Survey Period	Average PWL Recreation Days ¹		
	Minimum	Mean	Maximum
Peak-Season:			
Weekends/Holidays	53	88	123
Weekdays	15	29	43
Spring-Season:			
Weekends	0	3	8
Weekdays	2.5	5.5	8.5
Fall-Season:			
Weekends	10	32	54
Weekdays	0	4	11
¹ Recreation Day = (party size x overnights) + (1 x party size)			

Table 6. Peak-Season Average Recreation Days by Destination

Day of Week	Location	Overnight			Day Use		
		Minimum	Mean	Maximum	Minimum	Mean	Maximum
Weekends and Holidays	Non-Wilderness	20	33	46	14.5	24.5	34.5
	Wilderness	17	28	39	1.5	2.5	3.5
	Total	37	61	85	16	27	38
Weekdays	Non-Wilderness	7.5	15	22.5	3.5	6.5	9.5
	Wilderness	3.5	7	10.5	0.5	0.5	0.5
	Total	11	22	33	4	7	10

Table 7. Spring-Season Average Recreation Days by Destination

Day of Week	Location	Overnight			Day Use		
		Minimum	Mean	Maximum	Minimum	Mean	Maximum
Weekends	Non-Wilderness	0.0	0.0	0.0	0.0	1.5	4.0
	Wilderness	0.0	0.0	0.0	0.0	1.5	4.0
	Total	0.0	0.0	0.0	0.0	3.0	8.0
Weekdays	Non-Wilderness	0.9	2.0	3.1	0.8	1.8	2.7
	Wilderness	0.0	0.0	0.0	0.8	1.8	2.7
	Total	0.9	2.0	3.1	1.6	3.6	5.4

Table 8. Fall-Season Average Recreation Days by Destination

Day of Week	Location	Overnight			Day Use		
		Minimum	Mean	Maximum	Minimum	Mean	Maximum
Weekends	Non-Wilderness	6.8	21.5	36.3	2.2	6.3	10.3
	Wilderness	1.3	4.0	6.8	0.2	0.3	0.3
	Total	8.1	25.5	43.1	2.4	6.6	10.6
Weekdays	Non-Wilderness	0.0	2.0	4.6	0.0	1.3	3.6
	Wilderness	0.0	1.0	2.8	0.0	0.0	0.0
	Total	0.0	3.0	7.4	0.0	1.3	3.6

6.2.2 Packwood Lake Visitor Activities

Based on the 2006 surveys, visitors to Packwood Lake participated in a number of activities during their visits. The most popular activities of visitors to Packwood Lake, during all seasons, were visiting the beach, hiking and picnicking, followed by camping and wading/swimming at Packwood Lake. Shore and boat fishing for rainbow trout in Packwood Lake is also popular and is generally good, especially in late spring.

Tables 9, 10 and 11 provide estimates of average recreation days by activity at Packwood Lake. Estimates are given for non-Wilderness and Wilderness areas around Packwood Lake and by Weekend/Holiday and Weekday.

Table 9. Peak-Season Average Recreation Days by Activity

Activity	Packwood Lake Non-Wilderness		Packwood Lake Wilderness	
	Weekend/Holiday	Weekday	Weekend/Holiday	Weekday
Camping	33	15	28	7
Picnicking	58	18	20	8
Boat Fishing	8	0	1	2
Shore Fishing	25	10	20	1
Other Boating	1	0	1	2
Visiting Beach	56	20	28	8
Wading/Swimming	39	10	24	4
Hiking	58	17	30	6
Hunting	0	0	0	0
Take Pictures	0	0	0	0

Table 10. Spring-Season Average Recreation Days by Activity

Activity	Packwood Lake Non-Wilderness		Packwood Lake Wilderness	
	Weekend	Weekday	Weekend	Weekday
Camping	0	2	0	0
Picnicking	0	4	2	2
Boat Fishing	0	3	0	0
Shore Fishing	0	4	0	0
Other Boating	0	4	0	0
Visiting Beach	0	4	2	2
Wading/Swimming	0	0	0	0
Hiking	0	4	2	2
Hunting	0	0	0	0
Take Pictures	0	0	1	0

Table 11. Fall-Season Average Recreation Days by Activity

Activity	Packwood Lake Non-Wilderness		Packwood Lake Wilderness	
	Weekend	Weekday	Weekend	Weekday
Camping	22	2	4	1
Picnicking	24	3	4	1
Boat Fishing	0	0	0	0
Shore Fishing	14	0	2	0
Other Boating	0	0	0	0
Visiting Beach	26	3	4	1
Wading/Swimming	3	0	2	0
Hiking	24	3	4	1
Hunting	0	0	0	0
Take Pictures	0	0	0	0

6.2.3 Trail Use

Table 12 provides estimates of average daily use, based on the 2006 surveys, of the Pipeline Rd/Trail #74 and Trail #78. The average number of people per day shown on Table 12 includes people who go to Packwood Lake as well as others who use these routes that either do not make it to Packwood Lake, or go beyond Packwood Lake into other areas in the Wilderness. Trail #78

shows the most visitor use. Hiking Trail #78 is the most popular method of travel, and hiking the Pipeline Road/Trail #74 is the second most popular method. A relatively smaller percentage of visitors access Packwood Lake using horse/pack on Trail #78. ATV/ORV, motorcycle, and bike travel occurs on the Pipeline Road/Trail #74 route. Based on surveys, a relatively few people used horse/pack on the Pipeline/Trail #74 route; the majority of horse/pack use occurred on Trail #78.

Table 12. Average Daily Use of Pipeline Rd/Trail #74 and Trail #78

Season/Day	Average # People/Day								
	Pipeline Rd/Trail #74						Trail #78		
	ATV	Motorcycle	Bike	Hike	Horse	Total	Hike	Horse/Pack	Total
Peak-Season									
Weekend/Holiday	3.0	3.0	1.0	11.0	0.2	18.2	26.5	3.5	30.0
Weekday	0.2	0.5	1.2	4.0	0.0	5.9	7.0	2.5	9.5
Spring-Season									
Weekend	0.0	0.5	0.5	0.0	0.0	1.0	3.0	0.0	3.0
Weekday	1.0	0.0	0.0	3.5	0.0	4.5	0.0	0.0	0.0
Fall-Season									
Weekend	1.0	1.2	0.0	2.5	0.0	4.7	12.5	2.0	14.5
Weekday	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.7	3.7

6.2.4 Parking Lot Use

Table 13 shows the average daily use of the Packwood Lake trailhead parking lot, based on noon vehicle counts of vehicles/trailers during the 2006 survey days. As shown, the highest use is on the peak-season weekends with an average utilization of nearly 18 vehicles with or without trailers in the parking lot.

Table 13. Utilization of Packwood Lake Trailhead Parking Lot

	Peak-Season	Spring-Season	Fall-Season
Weekend	17.5	1.0	10.0
Weekday	5.0	1.0	2.0

6.2.5 Lake Creek

Recreation use of Lake Creek (the Project's bypass reach) is very minimal due to the creek's location within a steep canyon and limited access. Morning and afternoon observations of Lake Creek conducted in 2006 from the Old Highway 12 bridge found no people recreating at Lake Creek.

7.0 RECREATION DEMAND/TRENDS

A number of factors can influence recreation demand such as population growth, demographics and age of populations, economics, technology, etc. Aging baby boomers can demand different types of recreation activities, such as RV camping rather than dispersed camping. Increases in fuel prices could also impact different types of recreation activity demands.

Independent studies were reviewed to identify potential growth and trends in recreation use and activities. Population projection data from national and regional agencies were reviewed, applicable recreation studies and forecasts at the national and state levels were analyzed, and quantitative and qualitative forecasts of future recreational use and activities in the Project area were estimated.

7.1 National/Regional Trends/Projections

National and regional trends and projections, utilizing National Survey on Recreation and Environment (NSRE) data, are provided in the *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends* (Cordell et. Al., 1999). The purpose of the assessment was to describe recent trends, current conditions and likely futures for timber, water, wildlife and fish, range, minerals, and outdoor recreation and wilderness. Applicable to the Packwood Lake area and this Needs Analysis, the National Assessment describes recent trends and current participation in outdoor recreation, and uses those figures to forecast future participation trends under widely accepted assumptions about future population growth, changes in population makeup and shifts in the availability of recreation opportunities.

The National Assessment produced use estimates for 1995 and then calculated projections based on population growth and demographic shifts. Based on the national 1995 participant estimates and projections, the activities that are anticipated to expand significantly at the national level and are common in the study area include nonconsumptive wildlife activities, sightseeing, visiting beaches or watersides, biking and crosscountry skiing. Activities that are not expected to grow substantially include snowmobiling and off-road driving. Hunting was the only activity projected to decline nationally.

The National Assessment also looked at regional activity participation levels. Results from the Pacific Region, which includes Alaska, Washington, Oregon, California, and Hawaii, are presented below (Table 14). The regional outdoor recreation use patterns estimated for the Pacific Coast states differed substantially from those shown nationally. In general, almost all activities were expected to grow faster than the national rates. Winter sports participation, including snowmobiling and downhill skiing, were projected to increase by at least 30 percent by 2020, whereas projected national increases in these activities were lower. Nature activities, visiting the beach, picnicking and non-motorized boating were all projected to be among the fastest growing activities in the Pacific Coast states. Table 14 presents comparable data for the estimated 1995 participants in the Pacific Region for a range of outdoor activities and the projected percentage growth rates for 2000, 2010, 2020 and 2030. The 1995 figures are in millions of participants.

Table 14. Pacific Region Projected Percent Change

Activity	1995 (millions)	2000	2010	2020	2030
Nature activities	16.7	+8%	+23%	+37%	+52%
Visiting beach	20.7	+8%	+21%	+33%	+46%
Picnicking	15.8	+7%	+20%	+31%	+44%
Rafting/Floating/Canoeing	2.3	+5%	+20%	+30%	+52%
Bicycling	9.8	+6%	+19%	+29%	+41%
Non-pool swimming	11.6	+6%	+19%	+29%	+43%
Hiking	10.9	+8%	+23%	+34%	+53%
Backpacking	3.8	+5%	+12%	+23%	+24%
ORV use	4.7	+4%	+10%	+20%	+30%
Primitive camping	5.6	+5%	+13%	+23%	+27%
Equestrian activity	2.4	+5%	+18%	+29%	+46%
Fishing	7.5	+5%	+12%	+20%	+23%
Hunting	1.7	-6%	-15%	-21%	-27%
Snow Mobiling	0.7	+9%	+42%	+54%	+133%
Cross Country Skiing	1.1	+6%	+23%	+33%	+57%

7.2 State Trends/Projections

The Interagency Committee for Outdoor Recreation (IAC) Washington State Comprehensive Outdoor Recreation Plan (SCORP) (IAC, 2002), and specifically studies conducted to support the SCORP included a comprehensive survey of recreation activity patterns and produced estimates of participation and frequency rates for a wide variety of recreational activities.

The IAC is assigned the task of compiling statewide forecasts of recreation resource demand, and has compiled statewide participation data on a regular bases since the 1960s. The most relevant source for future recreation trends is the *Estimates of Future Participation in Outdoor Recreation in Washington State*, (IAC, 2003). Surveys, generally telephone contacts with a mail follow-up, were used to develop the current forecast. Estimates of future use are partially based on National Assessment projections for the Pacific Region. Trends were based on future population growth, age trends in Washington, estimates of resource and facility availability, user group organization and representation, current land use and land designations, and economic and social indicators, changes in population makeup, and shifts in the availability of recreation opportunities.

The results of the IAC study were estimates of future participation in 13 major outdoor recreation categories. These 13 categories were broken up further into subcategories when necessary. Table 15 presents relative growth rates developed by the IAC for activities that are applicable to the Project area.

Table 15. Projected Growth Rates for Selected Recreation Activities in Washington

Activities	Projected Change	
	1995-2010	1995-2020
Nature activities	+23%	+37%
Beach visitation	+21%	+33%
Picnicking	+20%	+31%
Rafting/Floating/Canoeing	+20%	+30%
Bicycling	+19%	+29%
Non-pool swimming	+19%	+29%
Hiking	+10%	+20%
ORV use	+10%	+20%
Primitive camping	+5%	+8%
Equestrian activity	+5%	+8%
Fishing	-5%	-10%
Hunting	-15%	-21%
Snow Mobiling	+42%	+54%
Cross Country Skiing	+23%	+33%
Source: IAC, 2003		

Activities related to nature appreciation, water activity and picnicking appear to be growing, while the growth in equestrian activities and dispersed camping is minimal (although RV/developed camping is growing at a much larger rate). The numbers of people fishing and hunting appears to be in decline.

Overall, participation as a percent of total population appears to be in decline, even though the state has seen an approximately 20 percent increase in population, an addition of just over one million people. The expanded population appears to explain reports of increased crowding at recreation sites, yet at the same time the study results show an apparently growing number of inactive people (IAC, 2003).

The IAC use projections for 2010 and 2020 are the same as those developed for the Pacific Region in the National Assessment described in Section 7.1, with a few exceptions:

- The IAC projects minimal growth in dispersed camping, and significantly less than the National Assessment. The IAC believes that due to environmental concerns, especially water quality and wildlife habitat, it is likely that primitive dispersed camping will come under tighter management control over the next ten years, resulting in some loss of opportunity. The IAC expects minimal growth, perhaps in the range of 5 percent over 10 years, versus the National Assessment's estimate of 13 percent. In comparison the IAC and the National Assessment predicts a growth in developed camping in the next ten years to be 19 percent, mainly due to the aging population and resulting desire for RV camping, or camping at developed sites with amenities.
- Considering the lack of growth in the hiking trail inventory, and the decline in participation with age, IAC suggests that projections outlined in the National

Assessment are not applicable in Washington. IAC estimates future participation will grow more slowly, in the range of 10 percent in the next 10 years, versus the National Assessment's 23 percent.

- For equestrian activities, the IAC does not agree with the National Assessment projections. Because of the rural lifestyle associated with equestrian activities and demonstrated relatively low participation for the past 20 years, the IAC does not believe that significant growth will take place over the next 20 years. IAC suggests that equestrian activity will grow only marginally, more slowly than general population growth. IAC estimates that growth will be about 5 percent over 10 years and about 8 percent over 20 years, rather than the National Assessment's projections of 18 percent and 29 percent, respectively.
- The National Assessment projects a slight increase in fishing while the IAC projects a decrease in fishing.
- The National Assessment projects a slight decrease in hunting, while the IAC projects a much steeper decrease in hunting.

7.3 Historic Trends

Historic trends in recreation use can provide an indication of recreation demand. Review of historical visitor use in GPNF Wilderness areas indicate that visitor use has declined over the years (Table 16). Goat Rocks Wilderness use has declined by 20 percent from 1998 to 2004.

Table 16. Historical Trends GPNF Wilderness Areas

Wilderness	Recreation Visitor Days							1998-2004 % Change	2003-2004 % Change
	1998	1999	2000	2001	2002	2003	2004		
Mt. Adams	22,400	19,620	27,200	25,810	23,030	23,300	18,674	-17%	-20%
Goat Rocks	21,250	12,730	17,500	18,760	13,340	18,080	14,409	-32%	-20%
Indian Heaven	12,000	8,968	11,200	12,770	10,760	10,700	9,731	-19%	-9%
William O. Douglas	8,920	6,370	7,000	6,420	5,270	4,240	3,920	-56%	-8%
Glacier View	4,300	2,100	3,200	2,730	1,240	1,160	1,629	-62%	+40%
Trapper Creek	2,200	2,190	2,500	2,600	2,220	1,720	1,434	-35%	-17%
Tatoosh	1,100	910	1,000	860	410	740	704	-36%	-5%
Total	72,170	52,888	69,600	69,950	56,270	59,940	50,501	-30%	-16%
Source: Forest Service, 2006									

Based on the IAC historical data (IAC, 2003), participation in different recreation activities has changed over the years. For instance, in 1979 driving for pleasure, camping, fishing and picnicking had the highest participation. In comparison sightseeing, picnicking, walking and hiking had the highest participation in 1989, while in 1999 walking, hiking, outdoor sports and nature activities had the highest participation. Further review of historical participation indicated that fishing and camping have declined, while more developed camping (RV camping) has

increased. Overall participation in outdoor activity as a percent of the total population has declined (IAC, 2003).

7.4 Economic Influences

Economic influences can affect recreation use and the types of recreation activities people engage in, to some degree. Increasing gas prices can influence recreation activities, especially motor boating, RV travel and off-road vehicle use. Generally, “gas guzzling” types of activities do not occur at Packwood Lake, with the exception of ORV use. The use of ORVs on the Pipeline Road/Trail #74 may decrease due to high gas prices, but the effect on the overall recreation use at Packwood Lake is not expected to be appreciably noticeable.

People will generally compensate for high gasoline prices by recreating closer to home. Based on the 2006 surveys, most visitors to Packwood Lake came from the nearby local area and adjacent counties. Approximately 64 percent of visitors to Packwood Lake came from Lewis County and its adjacent counties. Over 80 percent of visitors originated from less than 150 miles away from Packwood Lake. Travel time to Packwood Lake, and associated cost of gas, will deter some potential Packwood Lake visitors; however, since recently most visitors to Packwood Lake come from nearby, any decrease in Packwood Lake recreation use may be minor.

The overall economy can have an influence on recreation use. When the economy is healthy, as it is currently in many areas of Washington State, influences are more likely related to people spending more time at work and having less leisure time, than the price of gas for recreation travel.

The effect economic influences have on recreation use in the Project area is difficult to estimate; overall, however, it is expected to be minor.

7.5 Project Specific Projections

Future visitor use can be estimated based on population projections and recreation activity projections from IAC and National Assessment data. Both methods for estimating visitor use at Packwood Lake are analyzed below.

7.5.1 Recreation Use Growth Projections

Recreation studies indicate that as populations grow, demand for recreation opportunities will also grow. Estimated growth in Project-area recreation, based on this premise, can be determined from population forecasts and growth rates for the locations of visitors to Packwood Lake. The locations of visitors were determined based on the 2006 surveys. During surveys at recreation sites, people were asked where they are from. The percentages of visitors who came from different areas are shown on Table 17 (column a). Population projections from various locales were available to the year 2030. Area growth rates, based on the available projection data, multiplied by the percentage of people for each area provided a weighted average of the estimated Packwood Lake visitor population expected. The weighted average that has been estimated for the Packwood Lake area is 1.98%

Table 17. Population Weighting Factors for Estimating Recreation-Use Projections

Area	% of People From Each Area (column a)	Growth Rate of Population¹ (column b)	Weighted Average (a) x (b)
Local (Lewis County)	16.2%	2.1%	0.34%
Nearby Counties ²	47.5%	2.16%	1.03%
Other Western Washington Counties	21.4%	1.73%	0.37%
Other Eastern Washington Counties	6.1%	1.98%	0.12%
Oregon	7.1%	1.4%	0.10%
Other U.S. States	0.8%	0.78%	0.01%
Other Countries	0.9%	1.53%	0.01%
Weighted Average			1.98%
1 Based on population projections 2005-2030 from Washington OFM, US Census Bureau, BC Stats, and United Nations World Population Prospects			
2 Includes Pierce, Thurston, Cowlitz, Skamania and Yakima Counties			

Packwood Lake visitor projections, based on the weighted average, are shown on Table 18 for the non-Wilderness area around Packwood Lake and Table 19 for visitor use within the Wilderness portion of Packwood Lake. Visitor use in 2006 provides the baseline estimates with projections shown in 10-year increments from 2010 to 2030. Based on these projections, it is estimated that during the 24-year period between 2006 and 2030, annual visitation at Packwood Lake will increase by an average of 3,400 additional recreation days, which amounts to an approximate increase of 55 percent above current conditions, assuming demand can be met.

A comparison of camping activity with total visitor use, based on population projections is shown in Tables 20 and 21 for non-Wilderness and Wilderness areas, respectively, around Packwood Lake. Generally, campers make up more than half of the total recreation days. It can be assumed that all visitors at Packwood Lake (overnight and day users) will participate in day use activities.

Table 18. Packwood Lake Non-Wilderness Population Projections

Season/Day	Packwood Lake Non-Wilderness Recreation Days											
	2006			2010			2020			2030		
	Low	Mean	High	Low	Mean	High	Low	Mean	High	Low	Mean	High
Peak-Season												
Weekend/Holiday	45	58	81	48	62	87	58	76	108	71	92	129
Weekday	14	22	32	15	23	35	19	28	42	22	34	51
Spring-Season												
Weekend	0.0	1.5	4.0	0.0	1.6	4.3	0.0	2.0	5.3	0.0	2.5	6.5
Weekday	1.7	3.8	5.8	1.8	4.3	6.3	2.2	5.0	7.6	2.7	6.1	9.3
Fall-Season												
Weekend	9.0	28	47	9.7	30	50	12	37	61	14	45	75
Weekday	0.0	3.3	8.2	0.0	3.6	8.9	0.0	4.3	11	0.0	5.3	13
Projections based on Weighted Average (Table 17)												

Table 19. Packwood Lake Wilderness Population Projections

Season/Day	Packwood Lake Wilderness Recreation Days											
	2006			2010			2020			2030		
	Low	Mean	High	Low	Mean	High	Low	Mean	High	Low	Mean	High
Peak-Season												
Weekend/Holiday	20	31	43	21	33	46	26	40	56	31	49	68
Weekday	4.0	7.5	11	4.3	8.1	12	5.3	10	14	6.4	12	18
Spring-Season												
Weekend	0.0	1.5	4.0	0.0	1.6	4.3	0.0	1.9	5.3	0.0	2.4	6.4
Weekday	0.8	1.8	2.7	0.9	1.9	2.9	1.1	2.4	3.6	1.3	2.9	4.3
Fall-Season												
Weekend	1.5	4.3	7.1	1.6	4.7	7.7	2.0	5.7	9.3	2.4	6.9	11.4
Weekday	0.0	1.0	2.8	0.0	1.1	3.0	0.0	1.3	3.7	0.0	1.6	4.5
Projections based on Weighted Average (Table 17)												

**Table 20. Packwood Lake Non-Wilderness Camping vs. Total Use (Population Projections)
(Average Recreation Day)**

Season/Day	2006		2010		2020		2030	
	Camping	Total Use	Camping	Total Use	Camping	Total Use	Camping	Total Use
Peak-Season								
Weekend/Holiday	33	58	36	62	43	76	53	92
Weekday	15	22	16	23	20	28	24	34
Spring-Season								
Weekend	0.0	1.5	0.0	1.6	0.0	2.0	0.0	2.5
Weekday	2.0	3.8	2.2	4.3	2.6	5.0	3.2	6.1
Fall-Season								
Weekend	22	28	24	30	29	37	35	45
Weekday	2.0	3.3	2.2	3.6	2.6	4.3	3.2	5.3
Projections based on Weighted Average (Table 17)								

**Table 21. Packwood Lake Wilderness Camping vs. Total Use (Population Projections)
(Average Recreation Day)**

Season/Day	2006		2010		2020		2030	
	Camping	Total Use	Camping	Total Use	Camping	Total Use	Camping	Total Use
Peak-Season								
Weekend/Holiday	28	31	30	33	37	40	45	49
Weekday	7	7.5	8	8.1	9.2	10	11	12
Spring-Season								
Weekend	0.0	1.5	0.0	1.6	0.0	1.9	0.0	2.4
Weekday	0.0	1.8	0.0	1.9	0.0	2.4	0.0	2.9
Fall-Season								
Weekend	4.0	4.3	4.3	4.7	5.3	5.7	6.4	6.9
Weekday	1.0	1.0	1.1	1.1	1.3	1.3	1.6	1.6
Projections based on Weighted Average (Table 17)								

The assumption of a direct relationship between population growth and recreation use does not take into consideration other variables that influence recreation demand and growth. As stated in the SCORP (IAC, 2002 and 2003), there are a number of other variables that will likely increase recreation use in relation to population such as age and recreation opportunities.

7.5.2 Recreation Activity Projections

Both the National Assessment (Cordell, 1999) and IAC Future Participation study (IAC, 2003) provide forecasts of recreation activity (Sections 7.1 and 7.2) based on future population growth, as well as other variables, including demographic changes and recreation opportunities.

Although the information from the National Assessment is not as current as the information presented in the IAC study, the data is similar. The IAC study projections only provide projections to the year 2020. Therefore, for the purpose of projecting estimated recreation use by activity, the IAC study 2010 and 2020 projections will be used, while the National Assessment projections will be used in the analysis of projections to the year 2030. A few adjustments have been made to the National Assessment projections beyond 2020 based on IAC differences to future projections related to dispersed camping, hiking, fishing and hunting. Only information regarding activities that occur or may have the potential to occur in the Project area (around Packwood Lake) is used in this analysis.

Tables 22 through 24 provide peak-, spring-, and fall-season projections of recreation days for all recreation activities at Packwood Lake based on the IAC/National Assessment projections. As reflected in the estimates, visitors at Packwood Lake participate in a number of activities during their visits; for instance campers will visit the beach and hike in addition to camping.

Camping projections based on IAC and National Assessment projections are shown in Tables 25 and 26 for Non-Wilderness and Wilderness areas around Packwood Lake. Total use is also shown, with the assumption that all visitors at Packwood Lake (overnight and day users) will participate in day use activities summarized in Tables 22, 23 and 24. As seen by comparing population based projections (Tables 20 and 21), with activity projections (Tables 25 and 26), the IAC/National Assessment activity-based projections show less recreation growth than projections based solely on population growth.

Tables 27 and 28 provide current and future total recreation use within the non-Wilderness and Wilderness areas utilizing IAC and National Assessment activity-based growth rates. Computation of the standard error of the mean at a 95 percent interval provides low and high estimates of recreation use. Comparisons of recreation days using population projections (Tables 18 and 19) and activity projections (Tables 27 and 28) again demonstrate that the IAC/National Assessment activity based projections show less recreation growth than the population based projections.

**Table 22. PWL Peak-Season Activity Projections
(Average Recreation Day)**

Activity/Day	2006 Weekend	Projected Change		
		2010	2020	2030
Camping	61	62	66	68
Picnicking	78	82	102	112
Boat Fishing	9	9	8	8
Shore Fishing	45	45	41	38
Other Boating	2	2	3	3
Visiting Beach	84	89	112	123
Wading/Swimming	63	66	81	90
Hiking	88	91	106	114
Hunting	0	0	0	0
Nature Activities	0	0	0	0
Activity/Day	2006 Weekday	2010	2020	2030
Camping	22	22	24	24
Picnicking	26	27	34	37
Boat Fishing	2	2	2	2
Shore Fishing	11	11	10	9
Other Boating	2	2	3	3
Visiting Beach	28	30	37	41
Wading/Swimming	14	15	18	20
Hiking	23	24	28	30
Hunting	0	0	0	0
Nature Activities	0	0	0	0
Projections based on IAC (2003), and National Assessment (Cordell, 1999)				

**Table 23. PWL Spring-Season Activity Projections
(Average Recreation Day)**

Activity/Day	2006 Weekend	Projected Change		
		2010	2020	2030
Camping	0	0.0	0.0	0.0
Picnicking	3	3.2	3.9	4.3
Boat Fishing	0	0.0	0.0	0.0
Shore Fishing	0	0.0	0.0	0.0
Other Boating	0	0.0	0.0	0.0
Visiting Beach	3	3.2	4.0	4.4
Wading/Swimming	0	0.0	0.0	0.0
Hiking	3	3.1	3.6	3.9
Hunting	0	0.0	0.0	0.0
Nature Activities	1	1.1	1.4	1.5
Activity/Day	2006 Weekday	2010	2020	2030
Camping	2	2.0	2.2	2.2
Picnicking	6	6.3	7.9	8.6
Boat Fishing	3	3.0	2.7	2.6
Shore Fishing	4	4.0	3.6	3.4
Other Boating	4	4.2	5.2	6.1
Visiting Beach	6	6.4	8.0	8.8
Wading/Swimming	0	0.0	0.0	0.0
Hiking	6	6.2	7.2	7.8
Hunting	0	0.0	0.0	0.0
Nature Activities	0	0.0	0.0	0.0
Projections based on IAC (2003), and National Assessment (Cordell, 1999)				

**Table 24. PWL Fall-Season Activity Projections
(Average Recreation Day)**

Activity/Day	2006 Weekend	Projected Change		
		2010	2020	2030
Camping	26	26	28	29
Picnicking	28	29	37	40
Boat Fishing	0	0	0	0
Shore Fishing	16	16	14	14
Other Boating	0	0	0	0
Visiting Beach	30	32	40	44
Wading/Swimming	5	5	6	7
Hiking	28	29	34	36
Hunting	0	0	0	0
Nature Activities	0	0	0	0
Activity/Day	2006 Weekday	2010	2020	2030
Camping	3.0	3.0	3.2	3.3
Picnicking	4.3	4.5	5.6	6.2
Boat Fishing	0.0	0.0	0.0	0.0
Shore Fishing	0.0	0.0	0.0	0.0
Other Boating	0.0	0.0	0.0	0.0
Visiting Beach	4.3	4.6	5.7	6.3
Wading/Swimming	0.0	0.0	0.0	0.0
Hiking	4.3	4.4	5.2	5.6
Hunting	0.0	0.0	0.0	0.0
Nature Activities	0.0	0.0	0.0	0.0
Projections based on IAC (2003), and National Assessment (Cordell, 1999)				

**Table 25. Packwood Lake Non-Wilderness Camping vs. Total Use (Activity Projections)
(Average Recreation Day)**

Season/Day	2006		2010		2020		2030	
	Camping	Total Use	Camping	Total Use	Camping	Total Use	Camping	Total Use
Peak-Season								
Weekend/Holiday	33	58	33	59.5	36	67	37	71
Weekday	15	22	15	22.6	16	25	17	27
Spring-Season								
Weekend	0.0	1.5	0.0	1.5	0.0	1.7	0.0	1.8
Weekday	2.0	3.8	2.0	3.9	2.1	4.4	2.2	4.7
Fall-Season								
Weekend	22	28	22	29	23	32	24	34
Weekday	2.0	3.3	2.0	3.4	2.1	3.8	2.2	4.0
Projections based on IAC (2003) and National Assessment (Cordell, 1999)								

**Table 26. Packwood Lake Wilderness Camping vs. Total Use (Activity Projections)
(Average Recreation Days)**

Season/Day	2006		2010		2020		2030	
	Camping	Total Use	Camping	Total Use	Camping	Total Use	Camping	Total Use
Peak-Season								
Weekend/Holiday	28	31	28	32	30	36	31	38
Weekday	7	7.5	7.1	7.7	4.6	8.6	7.8	9.2
Spring-Season								
Weekend	0.0	1.5	0.0	1.5	0.0	1.7	0.0	1.8
Weekday	0.0	1.8	0.0	1.8	0.0	2.1	0.0	2.2
Fall-Season								
Weekend	4.0	4.3	1.0	4.4	4.3	4.9	4.4	5.3
Weekday	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Projections based on IAC (2003), and National Assessment (Cordell, 1999)								

Table 27. Packwood Lake Non-Wilderness Activity Projections

Season/Day	Packwood Lake Non-Wilderness Average Recreation Days											
	2006			2010			2020			2030		
	Low	Mean	High	Low	Mean	High	Low	Mean	High	Low	Mean	High
Peak-Season												
Weekend/Holiday	45	58	81	46.4	59.7	83.4	51.8	66.7	93.2	54.9	70.8	98.8
Weekday	14	22	32	14.4	22.7	33.0	16.1	25.3	36.8	17.1	26.8	39.0
Spring-Season												
Weekend	0.0	1.5	4.0	0.0	1.5	4.1	0.0	1.7	4.6	0.0	1.8	4.9
Weekday	1.7	3.8	5.8	1.8	3.9	6.0	2.0	4.4	6.7	2.1	4.6	7.1
Fall-Season												
Weekend	9.0	28	47	9.3	28.8	48.4	10.4	32.2	54.1	11.0	34.2	57.3
Weekday	0.0	3.3	8.2	0.0	3.4	8.4	0.0	3.8	9.4	0.0	4.0	10.0
Projections based on IAC (2003) and National Assessment (Cordell, 1999)												

Table 28. Packwood Lake Wilderness Activity Projections

Season/Day	Packwood Lake Wilderness Average Recreation Days											
	2006			2010			2020			2030		
	Low	Mean	High	Low	Mean	High	Low	Mean	High	Low	Mean	High
Peak-Season												
Weekend/Holiday	20	31	43	20.6	31.9	44.3	23.0	35.7	49.5	24.4	37.8	52.5
Weekday	4.0	7.5	11	4.1	7.7	11.3	4.6	8.6	12.7	4.9	9.2	13.4
Spring-Season												
Weekend	0.0	1.5	4.0	0.0	1.5	4.1	0.0	1.7	4.6	0.0	1.8	4.9
Weekday	0.8	1.8	2.7	0.8	1.9	2.8	0.9	2.1	3.1	1.0	2.2	3.3
Fall-Season												
Weekend	1.5	4.3	7.1	1.5	4.4	7.3	1.7	4.9	8.2	1.8	5.2	8.7
Weekday	0.0	1.0	2.8	0.0	1.0	2.9	0.0	1.2	3.2	0.0	1.2	3.4
Projections based on IAC (2003) and National Assessment (Cordell, 1999)												

7.5.3 Applicability of Projections

Because population growth, as well as other variables, was used in the activity-based projections, we believe that the activity-based projections are more accurate than simple projections based on population growth for estimating future recreation use at Packwood Lake. Review of the different types of data and analysis, reveals that the IAC (2003) and associated National Assessment (Cordell, 1999) activity-based projections provide a more accurate reflection of future Packwood Lake recreation use because of the number of variables factored into the analysis, including population growth, age trends, estimates of resource and facility availability, user groups organization and representation, current land use and land designations, economic and social indicators, and the availability of recreation opportunities. The analysis in this report,

based on the IAC/National Assessment, as well as historic trends, discussed in Section 7.3 of this report, indicated that recreation use likely will not grow at the same rate as population growth.

7.5.4 Trail Use Activity Projections

Tables 29 and 30 show estimated 2006 and the 2030 (in parenthesis) use of the Pipeline Road/Trail #74 and Trail #78, respectively, based on IAC and National Assessment projections for activities that occur on these trails. Based on these projections, it is expected that in 2030 the Pipeline Rd/Trail #74 will have an average of nearly 24 people per day during the busiest times of the year (peak-season weekend/Holiday), and that in 2030 Trail #78 will have an average of nearly 40 people per day using the trail during an average peak-season weekend.

Table 29. Pipeline Road/Trail #74 Activity Projections

Season/Day	Pipeline Road/Trail #74 Average # People/Day 2006 (2030)					
	ATV	Motor-cycle	Bike	Hike	Horse	Total Pipeline Rd/ Trail #74
Peak-Season						
Weekend/Holiday	3 (3.6)	3 (4.2)	1 (1.4)	11 (14.3)	0.2 (0.21)	18.2 (23.8)
Weekday	0.2 (0.21)	0.5 (0.7)	1.2 (1.7)	4 (5.2)	0 (0)	5.9 (7.8)
Spring-Season						
Weekend	0 (0)	0.5 (0.7)	0.5 (0.7)	0 (0)	0 (0)	1 (1.4)
Weekday	1 (1.2)	0 (0)	0 (0)	3.5 (4.6)	0 (0)	4.5 (5.8)
Fall-Season						
Weekend	1 (1.2)	1.2 (1.7)	0 (0)	2.5 (3.3)	0 (0)	4.7 (6.1)
Weekday	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Projections based on IAC (2003), and National Assessment (Cordell, 1999)						

Table 30. Pipeline Trail #78 Activity Projections

Season/Day	Trail #78 Average # People/Day 2006 (2030)		
	Hike	Horse/Pack	Total Trail #78
Peak-Season			
Weekend/Holiday	26.5 (34.5)	3.5 (3.9)	30 (38.3)
Weekday	7 (9.1)	2.5 (2.8)	9.5 (11.9)
Spring-Season			
Weekend	3 (3.9)	0 (0)	3 (3.9)
Weekday	0 (0)	0 (0)	0 (0)
Fall-Season			
Weekend	12.5 (16.3)	2 (2.2)	14.5 (18.5)
Weekday	3 (3.9)	0.7 (0.8)	3.7 (4.7)
Projections based on IAC (2003), and National Assessment (Cordell, 1999)			

7.5.5 Projections of Packwood Lake Trailhead Parking Lot Use

Projections regarding future visitor use of the Packwood Lake trailhead parking lot are made based on population projections. Since many visitors come to the trailhead parking lot, but only drive through, stay for a short time at the parking lot or go to Packwood Lake, it would be difficult to make projections based on recreation activity. During the busiest time of the year (peak-season weekends) an estimated 28 vehicles per day will be parked at the trailhead parking lot in 2030, assuming that utilization of the Packwood Lake trailhead parking lot will increase at a rate relative to population.

**Table 31. Utilization of Packwood Lake Trailhead Parking Lot
(Average # of Vehicles)**

	Peak-Season		Spring-Season		Fall-Season	
	2006	2030	2006	2030	2006	2030
Weekend	17.5	28.0	1.0	1.6	10.0	16.0
Weekday	5.0	8.0	1.0	1.6	2.0	3.2

8.0 PLAN AND POLICY GUIDANCE

8.1 Forest Service Land and Resource Management Plan (LRMP)

The Gifford Pinchot National Forest Land and Resource Management Plan (LRMP) was adopted in 1990 (Forest Service, 1990). Since then, several amendments have been approved and incorporated into the LRMP. In February 1995, the LRMP was amended (Forest Service, 1995), to incorporate the Northwest Forest Plan comprehensive ecosystem management strategy for managing National Forest System lands within the range of the northern spotted owl. In 1996, a Region-wide implementation monitoring program was initiated to monitor implementation of the Northwest Forest Plan standards and guidelines. In 1999, a Decision

Notice amended wilderness management standards and guidelines, particularly those related to determining limits of acceptable change (Forest Service, 1998).

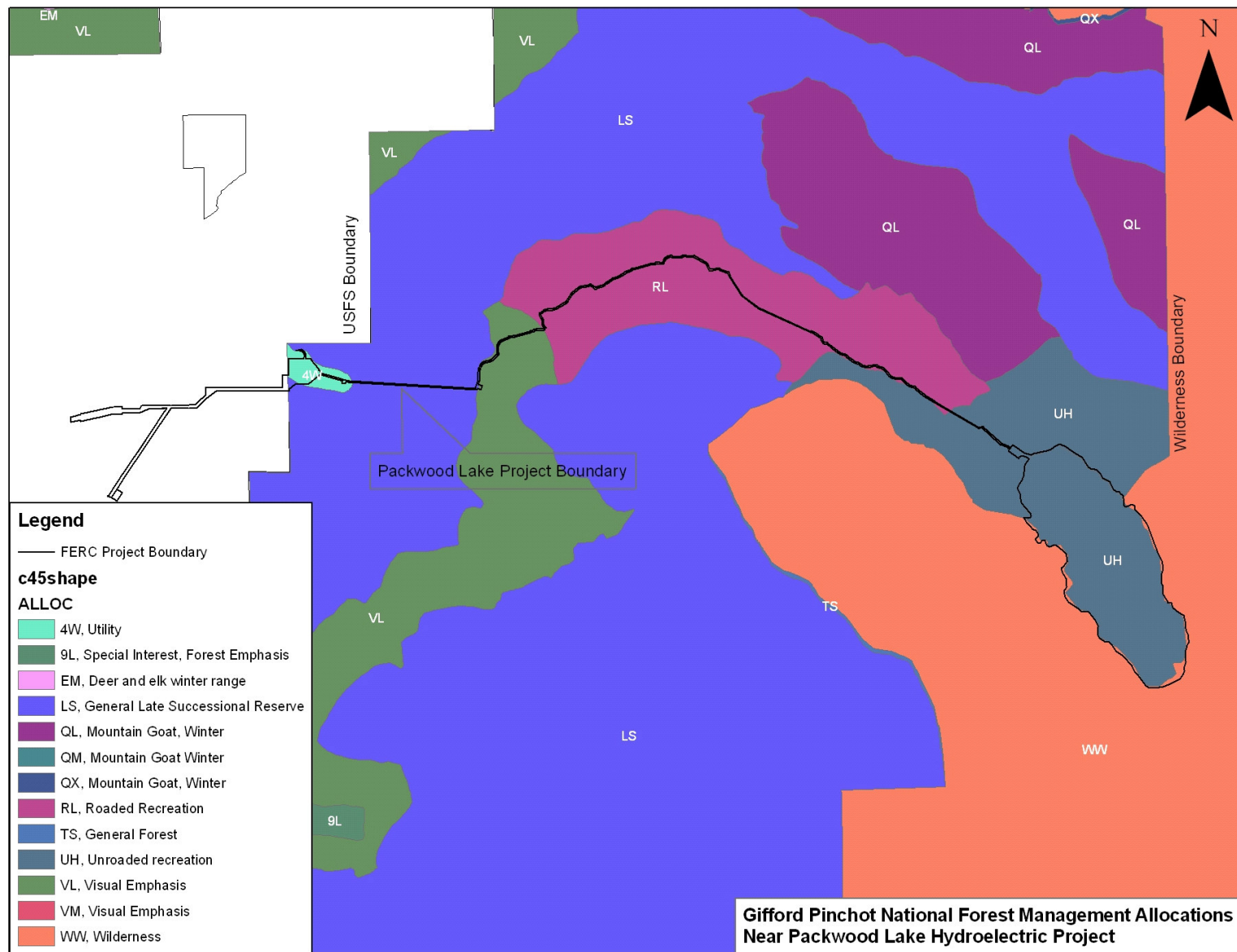
The LRMP established management areas for lands within the Gifford Pinchot National Forest (GPNF) along with goals and objectives and standards and guidelines. The Packwood Lake Project boundary is located within several Management Allocations (Figure 4). Over three quarters of the Packwood Lake shoreline is the designated Wilderness (WW) boundary. The remaining lake shoreline and Project area is within the Late-Successional Reserve (LSR) designation, which overlaps several management allocations within the Project boundary.

8.1.1 GPNF Non-Wilderness Area

The LSR designation includes Project area lands outside of the Wilderness boundary. The LRMP management goal of the LSR is to protect and enhance habitat for late-successional and old-growth related species, including the northern spotted owl (Forest Service, 1995).

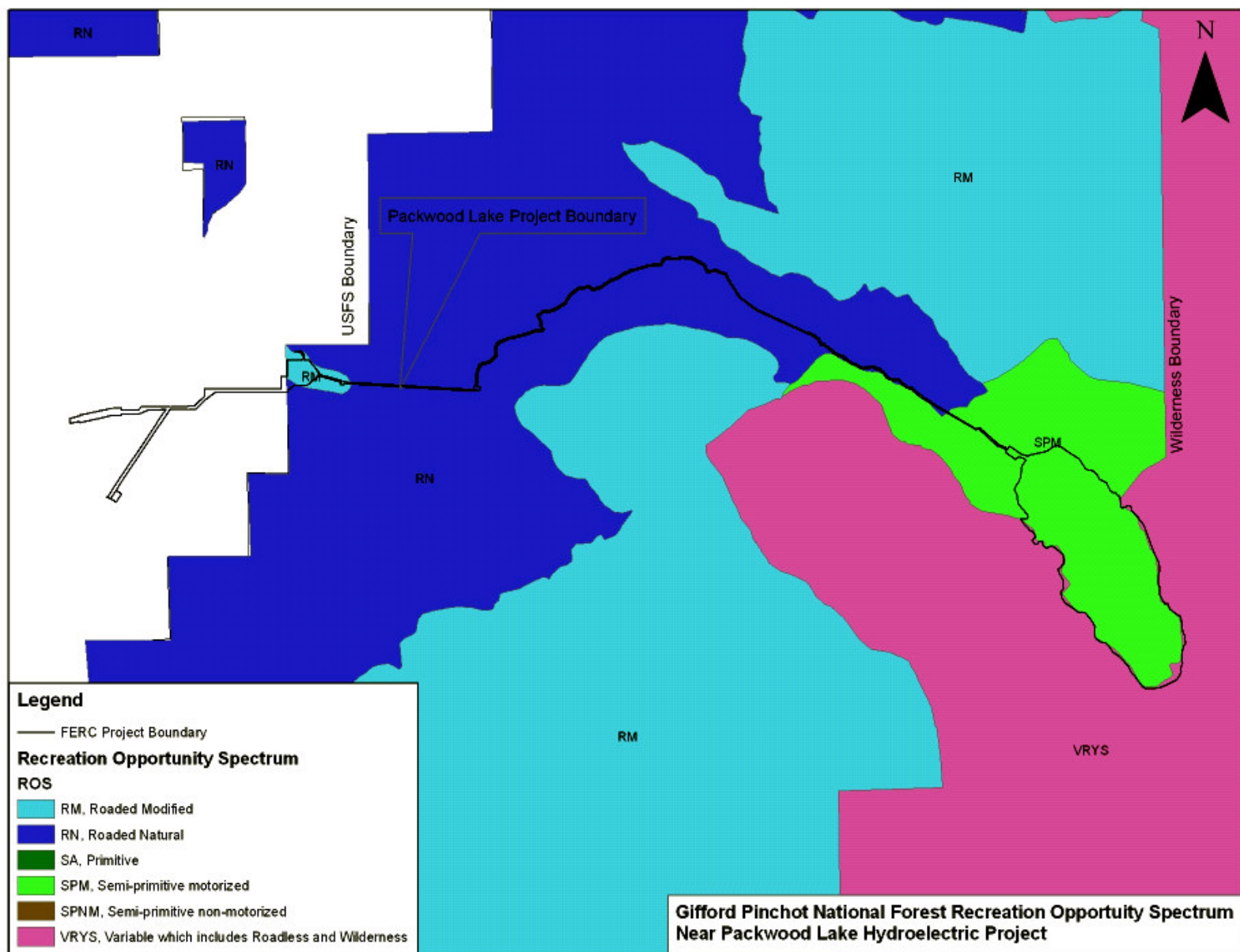
As shown on Figure 4, several management allocations in the Project area overlap the LSR designation, including Unroaded Recreation without Timber Harvest (UH), Roaded Recreation without Timber Harvest (RL), Visual Emphasis (VL), and Utility (4W). The northern portion of Packwood Lake and the upper portion of the Pipeline Road/Trail #74 are located within the UH, management categories. The lower portion of the Pipeline Road/Trial #74 and Trail #78, as well as the parking lot that serves both trails, are located within the RL category. The middle portion of the pipeline route and the powerhouse site are located within the VL and 4W categories, respectively. The following discussion focuses mostly on the management of Forest Service lands around Packwood Lake (UH), where recreation use is predominant, and trails that provide access to the Lake (UH and RL).

Packwood Lake itself is within the UH management allocation outside of the Wilderness and LSR boundaries (Figure 4). The lake's northern shoreline and lands to the north of Packwood Lake, including the intake and upper Pipeline Road/Trail #74, are located within the LSR and UH management category. Under the UH allocation, the resource management goal is to provide a variety of dispersed recreation opportunities in a semi-primitive or undeveloped setting, with an emphasis on maintaining a predominantly natural or naturally appearing environment. As stated in the LRMP, hydroelectric facilities should be designed to minimize adverse effects on the natural setting. The Recreation Opportunity Spectrum (ROS) class assigned to this management area is Semi-primitive Motorized (Figure 5). Under this class, motorized use is permitted in a moderate to large area characterized by a predominantly natural environment, with low interaction, and little site modification. Rustic or rudimentary improvements are designed primarily for protection of the site rather than the comfort of the users (FSM 2330).



Source: Gifford Pinchot National Forest, GIS Data

Figure 4. GPNF Management Allocations



Source: Gifford Pinchot National Forest, GIS Data

Figure 5. Recreation Opportunity Spectrum

Management standards and guidelines for the Semi-primitive Motorized ROS class include (Forest Service, 1995):

- Off-road vehicle use is usually limited to trails, which are typically difficult and challenging.
- Portions of the area or trails may be closed seasonally or year round to prevent resource damage and conflicts between different users and to accomplish management goals for adjacent areas.
- Trails will be designed to disperse use and take advantage of scenic views and other points of interest whenever possible. Existing primitive roads may be designated for ORV use.
- Trails will be constructed and maintained to a standard no higher than that designated.
- Native, local, or natural-appearing materials will be used in trail construction and maintenance, including culverts and bridges.
- Facilities are predominantly those required to distribute users.
- The area will be managed to produce no more than 15 encounters between groups of visitors per day. Groups should be no larger than 25 persons (encounter no more than 400 individuals each day).
- Campsites should be located away from lakeshores (100 feet (Bedell, 1994)), streamsides, and trails.
- No more than three other campsites should be visible from a given site and ORVs will avoid lakeshore and streamside areas.
- There will be no on-site informational facilities.
- Prescribed fire is limited to areas where ground vegetation will recover in two years.

The middle section of the Pipeline Road is located within the RL (Roaded Recreation without Timber Harvest) management category. The RL management area lands provide a variety of dispersed recreational opportunities in areas conveniently reached by auto and are managed to provide for interaction with a near-natural environment. The ROS class for this management area is Roaded Natural. This class is characterized by predominantly natural appearing environment with evidence of sight/sounds of humans, moderate site and resource modification, and conventional motorized use. The Management standards and guidelines for the Roaded Natural class include (Forest Service, 1995):

- Access should be provided to developed sites, trailheads, and other recreation areas.
- Access should be managed to provide for low to moderate concentrations of recreation users.
- Access should provide opportunities for dispersed motorized or non-motorized activities.
- Access should emphasize scenic values associated with driving for pleasure.
- Signs should be posted on all recreation roads and trail junctions, and at all trailheads.
- Facilities will be provided equally for protection of the site and comfort of users.
- Parking facilities will be designed to accommodate the number of visitors appropriate to a given trail or recreation site.

- Adequate and safe loading facilities for recreation livestock, boats, over-snow vehicles, and other ORVs may be provided.
- Facilities should be designed to accommodate handicapped persons whenever practicable.
- Camp units should be placed outside the foreground view from lakes, streams, trails, and key interest features.
- Simple wayside exhibits may provide information about features of the area. Information may also be conveyed via the news media and maps, brochures, and contacts at administrative headquarters and entry points.

Other areas within the Project boundary include the lower section of the Project pipeline route and the Project powerhouse. The lower section of Project pipeline route is within a VL (Visual Emphasis) management area (Figure 4). The management goal of VL area is to provide a visually natural or near-natural landscape as viewed from the designated travel route or use area. The ROS class for the VL management area is Roaded Natural, which is the same as the RL management area, described above. The Project powerhouse site is located within a 4W (Utility) management category (Figure 4). The ROS class for the 4W management area is Rural, which is characterized by substantially modified site and natural environment (Forest Service, 1995).

8.1.2 Goat Rocks Wilderness Area

The Wilderness (WW as shown on Figure 4) management allocation is a designated Congressionally Reserved Area. In 1964, Congress passed the Wilderness Act, which added the Goat Rocks to the new National Wilderness Preservation System. The Wilderness Act continues to be the guiding piece of legislation for all Wilderness areas. The Act defines Wilderness as follows:

- *“...lands designated for preservation and protection in their natural condition...”* Section 2(a)
- *“...an area where the earth and its community of life are untrammelled by man...”* Section 2I
- *“...an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvement or human habitation...”* Section 2I
- *“...generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable...”* Section 2I
- *“...has outstanding opportunities for solitude or a primitive and unconfined type of recreation...”* Section 2I
- *“...shall be devoted to the public purposes of recreation, scenic, scientific, educational, conservation and historic use.”* Section 4(b)

As described in the GPNF LRMP (Forest Service, 1995), the goal of the Wilderness designation is to preserve the wilderness character, allowing for natural processes and providing opportunities for solitude, challenge and inspiration. Within this intent, primitive or unconfined types of recreational, scenic, scientific, educational and historical uses are allowed. Desired future conditions of Wilderness follow a policy of non-degradation of Wilderness character and

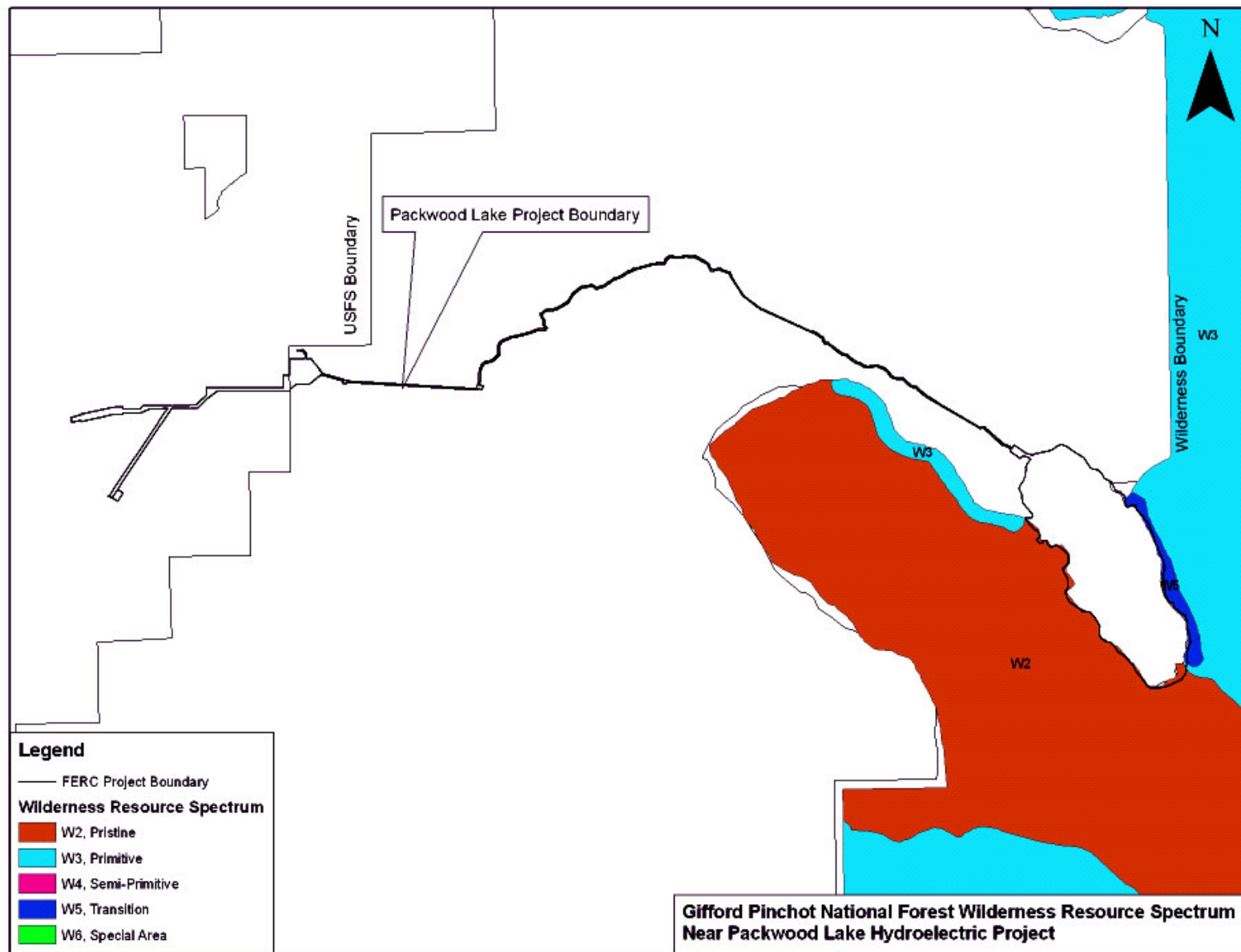
include no motorized activities and no roads within the Wilderness, except as required to serve valid mineral or energy projects initiated prior to December 31, 1983.

Management responsibility under the Wilderness Act is to provide, “outstanding opportunities for solitude or a primitive and unconfined type of recreation.” Relevant objectives and policies include (Forest Service, 2007):

- Provide, consistent with management of the area as wilderness, opportunities for public use, enjoyment and understanding of wilderness, through experiences that depend upon a wilderness setting.
- Provide outstanding opportunities for solitude or a primitive and unconfined type of recreation.
- Maximize visitor freedom within the wilderness. Minimize direct controls and restrictions. Apply controls only when they are essential for protection of the wilderness resource and after indirect measures have failed.
- Use information, interpretation, and education as the primary tools for management of wilderness visitors.
- Manage for recreation activities that are dependent on the wilderness environment so that a minimum of adaptations within wilderness are necessary to accommodate recreation.
- Do not designate campsites except as a last resort. Relocate or remove existing camps to allow maximum opportunity for solitude and to minimize the evidence of human use.
- Do not provide wilderness signs for the convenience of the visitor. Along with accurate maps, and wilderness education materials, provide a minimum number of signs for either the routing or location of the traveler or the protection of the wilderness resource.
- Do not approve the use of motorized equipment or mechanical transport unless justified as described in FSM 2326.1.
- Consistent with management as wilderness, permit outfitter/guide operations where they are necessary to help segments of the public use and enjoy wilderness areas for recreational or other wilderness purposes.

Under the authority of 36 CFR 261.50(a) (Order # 139-B), it is a violation of Wilderness regulation to camp within 100 feet of lakeshores.

The Wilderness area along the east side of Packwood Lake is designated as “transition” in the Wilderness Resource Spectrum (WRS), while the Wilderness along the west side of the Packwood Lake is designated as Pristine. Trail #78, which provides access to Packwood Lake, is partially located within the Wilderness lands designated as Primitive (Figure 6).



Source: Gifford Pinchot National Forest, GIS Data

Figure 6. Wilderness Resource Spectrum

The WRS management prescription for the Transition class directs that the average number of people encountered each day should be 24 or less and that no more than two campsites should be visible from a given site (Forest Service, 1998). The 1990 Forest Service standard for this classification is for sites not to exceed 600 sq. ft. of vegetation loss (Forest Service, 1990); however, a single upper limit standard of 900 sq. ft. of barren core (virtually free of vegetation) has been proposed for all sites, with an acceptable range of 0 to 900 sq. ft. and a collective target average of approximately 450 sq. ft. (Forest Service, 1998).

The WRS management prescription for the Pristine class directs that the average number of people encountered each day should be limited to an average of 3 per day and that no other campsites should be visible from a given site. The 1990 Forest Service standard for this WRS is 0 sq. ft. of vegetation loss (Forest Service, 1998). Proposed standards, stated above, include a collective target average of 450 sq. ft. of barren core and an upper limit standard of 900 sq. ft. (Forest Service, 1998).

Trail #78 traverses across an area with the WRS management prescription of Primitive. The Primitive classification directs that the average number of people encountered each day should be limited to an average of 6 per day (Forest Service, 1998). No camping is located along Trail #78 in this area.

8.1.3 Northwest Forest Plan Aquatic Conservation Strategy

Overlaying the Wilderness, Unroaded Recreation (UH) and Roaded Recreation (RL) land allocations within the Project boundary are watersheds and riparian reserves around Packwood Lake and Lake Creek and tributaries, which are key components of the Northwest Forest Plan Aquatic Conservation Strategy (ACS). The ACS seeks to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Out of the nine ACS objectives outlined within the range of the northern spotted owl, four provide management direction associated with recreation use at Packwood Lake. These include (Forest Service, 1995):

- Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
- Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
- Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Federally managed lands within the Lake Creek Watershed are designated as a Tier 1 Key Watershed. Tier 1 Key Watersheds were selected for directly contributing to anadromous salmonid and bull trout conservation and are highest priority for watershed restoration. Riparian Reserves are portions of watersheds where standards and guidelines prohibit or regulate activities that retard or prevent attainment of the ACS objectives. Riparian Reserves are not “buffers” in the traditional sense where management activities are prohibited; they are areas where special care is taken to assure protection of watershed and riparian processes and functions. For Packwood Lake, the Riparian Reserve consists of the Lake itself, and the Riparian Reserves along the lake shoreline. The width of the Riparian Reserve is the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a slope distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest.

Standards and guidelines that apply to new and existing recreation facilities within Riparian Reserves are summarized below (Forest Service, 1995):

- New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to meet ACS objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impacts to ensure that these do not prevent, and to the extent practicable contribute to, attainment of ACS objectives.
- Adjust dispersed and developed recreation practices that retard or prevent attainment of ACS objectives. Where adjustment measures such as education, use limitation, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

8.2 State Comprehensive Outdoor Recreation Plan (SCORP)

The Statewide Comprehensive Outdoor Recreation Planning (SCORP) program (RCW 43.99.025(3)) directs the Washington Interagency Committee for Outdoor Recreation (IAC) to prepare and update a strategic plan for the acquisition, renovation, and development of recreational resources and the preservation and conservation of open space. The plan sets goals for acquisition and development of public resources and analyzes whether recreation providers are meeting the demand for resources. The SCORP estimates recreation and recreation facility needs using recreation participation and actual behavior as indicators. The study found that almost half of the state’s recreation occurs on local lands and that approximately 17 percent occurs on Federal lands. It concludes that State and Federal lands receive fewer users, but still experience considerable use and conflict. Many people view recreational opportunities on undeveloped land as too far away or not accessible. The assessment found that increased crowding and conflict among and within virtually all types of recreation indicate a need for better-managed land and facilities (IAC, 2002).

The SCORP addressed needs and provided recommendations for local, state, federal and private landowners and managers. For the purpose of this report, federal lands are featured most prominently, but other recommendations are briefly summarized below:

- Local agencies are recommended to invest in preserving open space and natural areas and encouraged to work cooperatively with transportation planners to incorporate trails and bike routes into transportation infrastructure.
- The SCORP provided recommendations to the Washington Department of Fish and Wildlife (WDFW), the Washington Department of Natural Resources (DNR), Washington State Parks and the Washington Department of Transportation (WSDOT). For the most part, the recommendations suggested preserving and expanding undeveloped land for non-consumptive uses, working toward making public resources more accessible, and working toward management practices that minimized resource user conflicts.
- The recommendations for federal land management concentrated on the U.S. Forest Service and the National Park Service (NPS). The NPS is recommended to continue support for local recreation providers with technical and financial assistance. Recommendations for the Forest Service included maximizing its resources for providing outdoor recreation sites and facilities, which may entail charging fees for adequate sites and maintenance. The plan also recommended that the Forest Service consider local needs and planning in the development of its management plans. Lastly, the SCORP recommended that the Forest Service work with its constituents to identify land use designations that allow higher levels of access and use of lands outside wilderness, while continuing to maintain long-term preservation of natural settings.

The SCORP drew a number of conclusions with respect to statewide recreation needs. There is a high need to provide better-managed land and facilities supporting virtually all outdoor recreation categories. The most popular activities include walking, hiking and bicycling. Nature and natural settings play an important role in many activities. There is high participation in nature/natural setting dependent activities. These include observing and photographing the outdoors, particularly wildlife. Lastly, the SCORP points out the needs for more financial resources aimed at maintenance and management, and for improved data on public recreation behavior and preferences.

The IAC SCORP encouraged hydropower project operators to review recreation enhancement opportunities at projects. Specifically, the IAC SCORP recommended that hydropower operators "...enhance inventory with trails and paths for walking and bicycling, manage dispersed shoreline camping, improve access for on-water recreation, and improve opportunities for nonconsumptive interaction with nature, including fish and wildlife." In cases where hydropower operators have built recreation facilities on lands owned by other operators, IAC recommends that the licensee provide maintenance and operation assistance.

8.3 Lewis County Comprehensive Plan

Recreation policies and goals outlined in the Lewis County Comprehensive Plan (Lewis County, 2002) encourage opportunities for recreational and tourist activities that are well managed with respect to the overall preservation of natural resources. The County encourages the multiple use of forest land, which acknowledges the primary use and provides for other compatible uses.

These uses may include air and water quality, fauna, flora and their habitats, viewsheds, watersheds and dispersed recreation.

9.0 CAPACITY ANALYSIS

A number of approaches for analyzing capacity have evolved. Original concepts gave attention mostly to developing a specific number of visitors that represent the ideal carrying capacity of a recreation facility. However, many management issues regarding recreation capacity decisions are not necessarily density dependent, but are also related to the ecological, social and managerial aspects of recreational opportunities (McCool, 1996).

Recreation carrying capacity has been defined in a number of ways, but a useful definition is “the level of use beyond which impacts exceed standards” (Shelby and Heberlein, 1986). At some point, recreation demand cannot be met without negatively affecting sensitive resources and/or the recreation experience that people expect.

The Wilderness Act implies, but does not directly state, the need for determining visitor use capacity based on the social, biological and physical components of the Wilderness resource (Wilderness Institute, 2007). A Forest Service “Technical Guide for Integrating Recreation, Heritage and Wilderness into Land and Resource Management Planning (Haas, 2005), describes visitor capacity as “a measurement of the intersection point where people continue to receive the experiences they desire within the landscape’s ecological capacities. The Federal Interagency Task Force on Visitor Capacity on Public Lands (Haas, 2002), defines capacity as “the supply of, or prescribed number, of appropriate visitor opportunities that will be accommodated in an area.” There is also considerable support for the use of a standards-based (i.e. Limits of Acceptable Change) approach, which analyzes the capability of the social and biophysical components to accommodate recreation use without causing degradation of natural conditions. This approach is based on deciding what conditions are acceptable in a management area and then prescribing management actions (which may or may not include limits on visitor use).

For this Recreation Needs Analysis, the ecological, social, physical and managerial capacity and/or constraints at Packwood Lake are described in Sections 9.1 through 9.3. The purpose of the analysis is to define the ecological, social and physical capacities, and associated managerial constraints that can then be applied to the future, based on anticipated use levels. The analysis of recreation capacity involves both quantitative and qualitative value judgments. One or more of the capacity indicator variables, described below, may be identified as a limiting factor on recreation use, with the limiting factor defined as an indicator that constrains the level of recreation use (capacity) in the area.

- Ecological capacity concerns ecologically sensitive areas including riparian areas, wetlands, and steep slopes, etc. and indications that capacity is exceeded, including vegetation loss, compacted soils, sanitation concern, litter, stock waste, etc.
- Social capacity refers to visitors’ perceptions of surrounding recreation use, including perceived crowding, and opinions regarding their recreation experience, facilities and desired amenities.

- Physical capacity is related to the amount of actual space to accommodate visitor needs, such as number of dispersed sites, trails, parking spaces, etc., percent occupancy, and type/condition of facilities. Ecological and social capacity and managerial constraints can affect physical capacity.
- Managerial constraints refer to Forest Service objectives, policies, standards and guidelines that are generally related to ecological and physical constraints and recreation use. Because managerial standards are generally related to ecological and physical constraints they are discussed under these categories.

9.1 Ecological Capacity

A number of sensitive ecological areas and ecological impacts have been identified around Packwood Lake, which can result in constraints to recreation use along the lake.

As described in Section 8.1.3, Packwood Lake itself and lands around Packwood Lake are within a Tier 1 Key Watershed and riparian reserve. A number of Aquatic Conservation Strategy (ACS) objectives provide management direction for this area. In particular, the physical integrity of riparian areas, wetland and the aquatic systems, including shorelines and banks must be maintained and restored. The width of the riparian reserve is generally defined as the outer edges of the riparian vegetation, seasonally saturated soil, unstable areas or 300 feet slope distance, whichever is greatest. Special care must be taken within the riparian reserve to assure protection of watershed and riparian processes and functions.

Vegetative mapping, as part of the relicensing studies, identified Palustrine forested wetlands along the southern shoreline of Packwood Lake (Appendix A).

Steep slopes occupy nearly all of the east side of Packwood Lake and the southwestern quarter of Packwood Lake (Appendix B).

Soil compaction has occurred at most dispersed sites. Vegetation loss, or lack of vegetation, is apparent at all dispersed sites, especially where the forest canopy is dense. Soil compaction and vegetation loss due to human and stock use has resulted in enlarged campsites within the non-Wilderness and Wilderness areas around Packwood Lake. In many locations, two or three campsites blend together to create very large areas along the shoreline.

Accumulations of trash, and stock and human waste have been documented within 100 feet of the shoreline. Because toilet/outhouses are not usable, human waste occurs near these dilapidated structures.

User developed fire pits and fire scars were observed at 18 of the 20 dispersed sites in the non-Wilderness area, and at 16 of 23 monitored dispersed sites within the Wilderness boundary. Connector trails were observed between many of the campsites, below trails #78 and #81.

9.2 Social Capacity

Recent surveys provided information regarding social capacity, such as opinions related to crowding, facility needs or managerial directions.

Surveys conducted in 2006 indicated that visitors overall seemed to enjoy the Packwood Lake area (Howe, 2007). Visitors gave the Packwood Lake area and experience very high ratings (between 4.2 and 5 on a scale of 1 to 5, with 5 being the best). Based on visitor ratings, visitors to Packwood Lake did not seem to think that the Packwood Lake area is overcrowded. When asked their opinions regarding moving campsites away from the lake shore and eliminating ORV/Motorized vehicles at Packwood Lake, the majority did not want campsites moved, while there were more mixed opinions regarding ORV/motorized vehicles. Comments from 2006 survey respondents regarding improvements or amenities at Packwood Lake included better, cleaner, and more outhouses (38.7% or 24 survey respondents), trash removal or trash cans (11.3% or 7 survey respondents), boat rentals (8.1% or 5 survey respondents), and a number of other comments associated with horse, ORV and trail use, and other amenities.

A study of the Gifford Pinchot National Forest (GPNF) was conducted in 2000-2001 as part of the US Forest Service National Visitor Use Monitoring (NVUM) initiative (Graefe, et al., 2002). The purpose of the study was to determine recreation use patterns, satisfaction levels, economic expenditures, and experiences currently occurring in the GPNF. On-site interviews were conducted during October 1, 2000 through September 30, 2001. Results indicated that in the Cowlitz Valley District, in which Packwood Lake is located, visitors spent the most time in undeveloped areas of the Forest and in designated wilderness areas. The results indicated that visitors to the GPNF are generally quite satisfied with their visits and would like to see management continue in the directions that are currently being pursued (Graefe, 2002).

9.3 Physical Capacity

The physical capacities of existing and potential future dispersed sites, trails, trailhead parking and other public facilities associated with recreation use at Packwood Lake are summarized in this section.

9.3.1 Packwood Lake Dispersed Sites

Current and potential future physical capacity is reviewed based on the existing situation (Dispersed Sites – Existing Conditions), and based on the physical capacity in conformance with ecological, social and managerial constraints (Dispersed Sites – with ecological, social and managerial constraints).

Dispersed Sites – Existing Conditions/Utilization

The current physical capacity or current utilization at Packwood Lake is reviewed here without consideration of ecological or managerial (Forest Service standards) constraints, since currently there are no controls or enforcement of these constraints. The current utilization is based on current visitor use at Packwood Lake, number of usable dispersed sites, and capacity of the area

based on the average group size of Packwood Lake visitors. This review only looks at the number of visitors that can be accommodated at Packwood Lake, based on the current number of dispersed sites.

Eighteen dispersed campsites and 2 dispersed day-use sites were identified in 2006 along the non-Wilderness Shoreline of Packwood Lake (Figure 7). Within the Wilderness portion of Packwood Lake, the Forest Service monitors 23 dispersed sites (Figure 7). At least five of the Wilderness dispersed sites are not suitable for camping because of rocky conditions and disturbance due to stock impacts, flooding, and downed trees, so are not included in this analysis. On-site review of non-Wilderness dispersed sites and review of Forest Service Wilderness site monitoring forms showed dispersed sites ranging from very small (less than 400 sq. ft.) to quite large sites (almost 4,000 sq. ft.) which would account for a range in the number of visitors that could occupy each dispersed site. For purposes of this review, the average group size is used to estimate occupied sites, which varies between 2 to nearly 4 people per group, depending on the season, day of the week and location (non-Wilderness or Wilderness). All Packwood Lake visitors (overnight and day users) are included in the calculations because day users, as well as campers, utilize the dispersed sites along Packwood Lake.

Based on the mean and high end visitor use estimates, average group sizes and current number of dispersed sites, the current utilization in the non-Wilderness portion of Packwood Lake area is at nearly 75 percent or above capacity. Recreation activity based projections, based on the current situation, with no changes in the number of dispersed sites or ecological or managerial constraints, indicate that the non-Wilderness area along Packwood Lake will likely be at or over the physical capacity (# of dispersed sites) during nearly all peak-season weekends by the year 2030. During peak-season weekdays and during off-season (spring and fall) weekend and weekdays estimated current and future visitor utilization of existing dispersed sites is relatively low as shown on Table 32.

Table 33 shows existing and potential future Wilderness visitor utilization, based on the existing dispersed sites in the area, described above. As shown, the current and future physical capacity, based on the existing dispersed sites and current and projected visitor use, is not exceeded; however, during some peak-season weekends it is likely that most dispersed sites are occupied. Projections indicate increased utilization in the future, with a high end estimate of nearly 80 percent utilization in 2030, assuming the current number of dispersed sites are available, while Wilderness utilization during other times of the year is low, based on the current number of dispersed sites available.

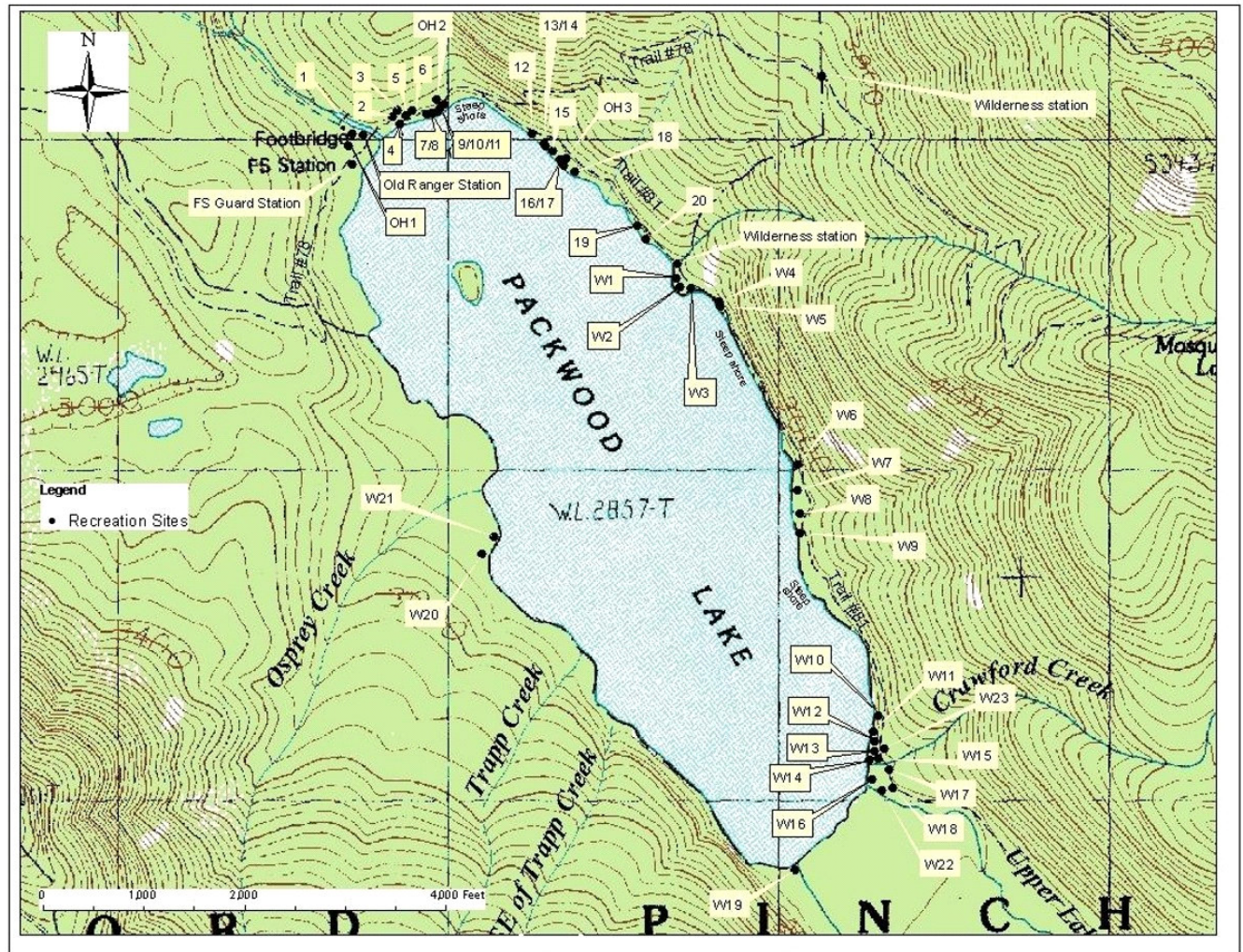


Figure 7. Packwood Lake Recreation Inventory

**Table 32. Packwood Lake Non-Wilderness Utilization (Current Conditions)
(Based on Current Use)**

Season/Day	Packwood Lake Non-Wilderness					
	2006			2030		
	Low	Mean	High	Low	Mean	High
Peak-Season						
Weekend/Holiday	58%	74%	104%	70%	91%	127%
Weekday	23%	37%	53%	29%	45%	65%
Spring-Season						
Weekend	0.0%	2.5%	6.7%	0.0%	3.0%	8.2%
Weekday	3.5%	7.9%	12.1%	4.4%	9.6%	14.8%
Fall-Season						
Weekend	0.0%	2.1%	5.7%	0.0%	3.0%	8.2%
Weekday	4.3%	9.5%	14.5%	5.3%	11.5%	17.8%
Utilization based on estimated 2006 Recreation Days, group size and current dispersed sites Projections based on IAC (2003), and National Assessment (Cordell, 1999)						

**Table 33. Packwood Lake Wilderness Estimated Utilization (Current Conditions)
(Based on Current Use)**

Season/Day	Packwood Lake Wilderness					
	2006			2030		
	Low	Mean	High	Low	Mean	High
Peak-Season						
Weekend/Holiday	30%	47%	65%	37%	57%	79%
Weekday	7.9%	15%	22%	10%	18%	27%
Spring-Season						
Weekend	0.0%	2.8%	7.4%	0.0%	3.3%	9.1%
Weekday	1.9%	4.2%	6.3%	2.3%	5.1%	7.6%
Fall-Season						
Weekend	0.0%	2.4%	6.3%	0.0%	3.3%	9.1%
Weekday	2.2%	5.0%	7.5%	2.8%	6.1%	9.2%
Utilization based on estimated 2006 Recreation Days, group size and current dispersed sites Projections in IAC (2003), and National Assessment (Cordell, 1999)						

Dispersed Sites - with Ecological, Social and Management Constraints

A number of ecological and managerial standards will limit the physical capacity for recreation use at Packwood Lake. Ecological capacity issues were discussed above. These, in combination with Forest Service objectives, standards and policies relative to the physical capacity and associated recreation use are summarized below.

Non-Wilderness

The management direction for non-Wilderness areas around Packwood Lake is to provide a variety of dispersed recreation opportunities in a semi-primitive or undeveloped setting. Motorized use is permitted with predominantly natural environment, low interaction and little site modification. This area is managed to produce no more than 15 encounters between groups of visitors per day and groups should be no larger than 25 persons (encounter no more than 400 individuals each day). Based on the estimated combined average peak weekend of 58 non-Wilderness and 31 Wilderness recreation days, these standards for encounters are generally met. Groups as large as 40 people, however, have been documented visiting Packwood Lake, which exceeds the group size standard for this area.

Forest standards state that no more than three other campsites should be visible from a given site and ORVs will avoid lakeshore and streamside areas. In several areas along Packwood Lake this standard is not met; in some instances, two to three combined campsites are also visible from other nearby campsites.

Within the non-Wilderness area around Packwood Lake, 16 of the 20 dispersed sites are located within 100 feet of the lakeshore and are not in compliance with general Forest standards which state that dispersed sites should be located away from the lakeshores (100 feet), streamsidess, and trails.

Wilderness

Wilderness management standards follow a policy of non-degradation and preservation of the wilderness character, allowing for natural processes and providing for outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Site monitoring conducted by the Forest Service in 2004 demonstrated that standards were not met within the Goat Rocks Wilderness at Packwood Lake; new sites had been created, and the average campsite condition had deteriorated (Forest Service, 2006).

The Wilderness Resource Spectrum management prescriptions for the Transition class (east side Wilderness shoreline) and the Pristine class (west side Wilderness shoreline) are for sites not to exceed 600 sq. ft. of vegetation loss (Forest Service, 1990). However, a single upper limit standard of 900 sq. ft. of barren core (virtually free of vegetation) has been proposed for all sites, with an acceptable range of 0 to 900 sq. ft. and a collective target average of approximately 450 sq. ft. (Forest Service, 1998). Currently 16 of 23 dispersed sites within the Wilderness are above the target average, with four sites within this area exceeding 2,000 sq. ft. of barren core, including a site with 3,865 sq. ft. of barren core.

The WRS management prescription for the Transition class (east side Wilderness shoreline) directs that the average number of people encountered each day should be 24 or less and that no more than two campsites should be visible from a given site (Forest Service, 1998). Wilderness site density standards include 3 campsites per any acre. Based on the estimated average of 31 peak-season weekend recreation days within the Wilderness area along Packwood Lake, the

standards for encounters may be exceeded during many peak-season weekends, but should not be exceeded during weekdays or other seasons of the year. Currently, there are several campsites bunched together at the southeast end of Packwood Lake, which exceeds the visibility and density Wilderness standards.

The WRS management prescription for the Pristine class (west side Wilderness shoreline) directs that the average number of people encountered each day should be limited to an average of 3 per day and that no other campsites should be visible from a given site. Site density standards include 1 campsite per any acre. Because the west side of Packwood Lake is less accessible, and more remote with only a few dispersed sites, the standards for encounters in this management area are likely not exceeded. However, two of the three dispersed sites that exist within this management area are relatively close together and with only partial screening are visible from each site. These two sites exceed the visibility and density standards for this management area.

Within the Wilderness area around Packwood Lake, 20 of the 23 dispersed sites are within 100 feet of the lakeshore, which is in violation of Wilderness regulations.

Riparian Reserves

Riparian Reserves extend all around Packwood Lake. Utilizing general width specifications of 300 feet for riparian reserves along a shoreline, all existing dispersed sites along Packwood Lake are within riparian reserves. Activities are not prohibited within riparian reserves although standards and guidelines require special care to assure protection of watershed and riparian processes and functions (Forest Service 1995).

Utilization of Dispersed Sites with Ecological, Social and Management Constraints

As described above, there are a number of ecological and managerial standards that will limit the physical capacity for recreation use at Packwood Lake. With enforcement of the major ecological constraints and associated management standards, the current number of dispersed sites along the shoreline of Packwood Lake will be significantly reduced, and current and future utilization of the remaining sites will be extremely high during the peak-season as demonstrated on Tables 34 and 35, below. With this scenario, the recreation demand will not be met, and there will be a need to either provide additional dispersed sites in the Packwood Lake area, or limit recreation use.

**Table 34. Packwood Lake Non-Wilderness Utilization w/Managerial Compliance
(Based on Current Use and Compliance with Ecological and Managerial Standards)**

Season/Day	Packwood Lake Non-Wilderness					
	2006			2030		
	Low	Mean	High	Low	Mean	High
Peak-Season						
Weekend/Holiday	288%	372%	519%	352%	454%	634%
Weekday	117%	183%	267%	143%	223%	625%
Spring-Season						
Weekend	0.0%	13%	33%	0.0%	15%	41%
Weekday	18%	40%	60%	22%	48%	74%
Fall-Season						
Weekend	0.0%	11%	29%	0.0%	15%	41%
Weekday	21%	48%	73%	26%	58%	89%
Utilization based on estimated 2006 Recreation Days, group size and number of dispersed sites that meet major ecological constraints and managerial standards. Projections based on IAC (2003), and National Assessment (Cordell, 1999)						

**Table 35. Packwood Lake Wilderness Estimated Utilization w/Managerial Compliance
(Based on Current Use and Compliance with Ecological and Managerial Standards)**

Season/Day	Packwood Lake Wilderness					
	2006			2030		
	Low	Mean	High	Low	Mean	High
Peak-Season						
Weekend/Holiday	180%	279%	387%	220%	341%	473%
Weekday	48%	89%	131%	58%	110%	160%
Spring-Season						
Weekend	0.0%	17%	44%	0.0%	20%	54%
Weekday	11%	25%	38%	14%	31%	46%
Fall-Season						
Weekend	0.0%	14%	38%	0.0%	20%	54%
Weekday	13%	30%	45%	17%	37%	55%
Utilization based on estimated 2006 Recreation Days, group size and number of dispersed sites that meet major ecological constraints and managerial standards. Projections based on IAC (2003), and National Assessment (Cordell, 1999)						

9.3.2 Trails

Currently the highest utilization of both the Pipeline Rd/Trail #74 and Trail #78 is during the peak-season weekends. During these times, an average of approximately 18 people per day utilize the Pipeline Road Trail #74 and approximately 30 people per day utilize Trail #78.

Estimates of future use of these trails were presented above (Section 7.5.4). Projections were based on the type of activity or method of travel, including ATV (ORV), motorcycle, bike, hike and horse on the Pipeline Rd/Trail #74 and hiking and horse pack on Trail #78. Projections assume that the utilization in the year 2030 on the Pipeline Road/Trail #74 will increase by 30 percent, and by 28 percent on Trail #78.

The Pipeline Road/Trail #74 extends from the Packwood Lake parking lot to Packwood Lake. Within this area, management standards prescribe encounters of no more than 400 individuals each day. Estimated current and future utilization of the Pipeline Road/Trail #74 is well below these standards.

Trail #78 extends from the Packwood Lake trailhead parking lot to Packwood Lake where it continues east uphill, away from Packwood Lake, into the Goat Rocks Wilderness. Between the parking lot and Packwood Lake, Trail #78 traverses across an area with a WRS management prescription of Primitive. The Primitive classification directs that the number of people encountered each day should be limited to an average of 6 (Forest Service, 1998). Within this part of Trail #78 it is likely that 6 or more people will be encountered during peak-season weekends. For other sections of Trail #78, between the Packwood Lake trailhead parking lot and Packwood Lake, general Forest management standards prescribe encounters of no more than 400 individuals each day. Estimates of current and future use of Trail #78 are significantly lower than the 400 individuals per day standard.

Near the Wilderness boundary along Packwood Lake, Trail #81 extends from Trail #78 and proceeds south along Packwood Lake. The WRS management prescription for the Transition class (east side Wilderness shoreline) directs that the average number of people encountered each day should be 24 or less. Based on the estimated average of 31 peak-season weekend recreation days within the Wilderness area along Packwood Lake, the standards for encounters may be exceeded on Trail #81 during many peak-season weekends, but should not be exceeded during weekdays or other seasons of the year. Based on projections of future recreation use in this area, it is expected that standards for encounters will be exceeded in the future during the peak-season.

9.3.3 Packwood Lake Trailhead Parking Lot

Although the Packwood Lake trailhead parking lot was designed for a maximum capacity of around 50 vehicles and trailers, the lot can probably only fit around 30 to 45 vehicles and trailers, depending on the number of trailers and how well vehicles/trailers are parked. Section 7.5.4 of this report provided estimates of the current and future vehicle use at the Packwood Lake trailhead parking lot. The highest use of the trailhead parking lot occurs during peak-season weekends with an average utilization of nearly 18 vehicles with or without trailers in the parking lot. The maximum number of vehicles observed during noon counts was 34 vehicles at the parking lot on July 1, 2006; on that day the parking lot was full. On a couple of days in mid-July and early August the parking lot had 28 and 30 vehicles, respectively. Based on observations, it is assumed that the parking lot may be full or close to capacity during several weekend days in July and August. During peak-season weekdays and during the off-seasons (spring and fall) weekends and weekdays there is plenty of vehicle parking space.

Future projections to the year 2030 indicate that during average peak-season weekends, use of Packwood Lake trailhead parking lot will be over 80 percent of its capacity, indicating that there will be many days during peak-season weekend that the parking lot will be full. Future 2030 average week day peak-season utilization is estimated to be at less than 50 percent. The Packwood Lake trailhead parking lot is expected to have plenty of vehicle parking space in the future, during non-peak season times of the year.

9.3.4 Condition of Public Facilities

A single vault CXT toilet is located near the southwest side of the Packwood Lake trailhead parking lot. This toilet is in good condition and was recently painted (in the summer of 2006). Another toilet is located near the Trail #78 trailhead, nestled in the woods approximately 100 feet from the parking area, just north of the trail. This toilet is no longer maintained by the Forest Service.

Three toilets/outhouse structures are located in the non-Wilderness portion of Packwood Lake. The first toilet is located southwest of the historic ranger station near the ATV (ORV) parking area (OH1 on Figure 7). This structure was designed as a transportable tank on an ATV trailer that was placed within the outhouse structure. The ATV trailer was emptied two or three times a year. The trailer was stolen sometime in late 2004 or early 2005 and the toilet has not been serviced or maintained since. The outhouse structure is located in a low area that is swampy during rainy seasons.

The other two toilets/outhouses (OH2 and OH3 on Figure 7) are located near Packwood Lake within the non-Wilderness area. Both outhouses are remnants of the old “resort” and were likely constructed in the 1960s. Neither of the outhouses has been serviced or maintained by the Forest Service in years. These outhouses are in poor condition; they no longer meet the standards and guidelines of Forest Service recreation facilities and are not intended for public use at this time.

Two Wilderness entry permit stations are located at the Wilderness boundary along Trail #78 and Trail #81. Each station consists of a Wilderness entry sign, a trailside bulletin board and permit box. The Forest Service maintains these stations on a regular basis

10.0 RECREATION NEEDS AND POTENTIAL

10.1 Market Considerations (Supply and Demand)

Recreation needs can be identified by comparing the relationship between demand (what people want) and supply (what the forest has to offer within the ecological capabilities). Based on this premise, demand minus supply equals needs. The ability of the Packwood Lake area to accommodate recreation needs is based on the opportunities as well as constraints of the resources. When reviewing the supply and demand at Packwood Lake, the supply is minimal given enforcement of ecological and managerial constraints, and the demand for recreation activities, based on National and State guidelines, greatly exceeds the supply, as shown in Tables 34 and 35 above. However, without ecological and management constraints driving the supply of recreation opportunities, the existing and near future demand can generally be met (refer to

Tables 32 and 33).

Management standards limit dispersed sites to areas where ecological impacts are minimal, which in turn limits the supply of recreation opportunities.

10.2 Recreation Needs and the Ability of the Packwood Lake Area to Accommodate Needs

Recreation needs and the ability of the Packwood Lake area to accommodate needs is based on a number of factors including visitor surveys, facility/site supply and conditions, agency comments, visitor demands, physical and ecological constraints and management standards.

The majority of comments from visitors surveyed in 2006 were related to the need for new toilets. The need for trash receptacles was also identified in the surveys. Currently human waste and trash can be problem during the peak-season around Packwood Lake, particularly in the non-Wilderness portion of the Lake where visitor use is the greatest. The toilet near the historic ranger station is currently not in service, and the two outhouses, left over from the old resort, have not been maintained or serviced in years and do not meet Forest Service standards. These old toilets need to be removed and new pit toilets need to be installed within the non-Wilderness area, if the current recreation demand in that area continues. Additionally, containers for trash, or signs informing visitors to pack out trash would help reduce litter within the area.

With general maintenance, the Packwood Lake trailhead parking lot and Pipeline Road/Trail #74 and Trail #78 should be adequate to meet current and near future needs. However, the Wilderness standard for encounters will likely not be met by 2030 for the section of Trail #78, between the parking lot and Packwood Lake, because of its “primitive” Wilderness Resource Spectrum designation.

The Forest Service has indicated that the motorized Pipeline Road/Trail #74 access to Packwood Lake contributes to the level of use and refuse, and detracts from the aesthetic environment in the area. Current public motorized use of this route was mandated by the Forest Service, and the Forest Service can likewise mandate that no public motorized use be allowed on this route. If the Forest Service chooses to mandate no public motorized use, the entrance gate would need to be revised to prevent public ORVs use of this route by driving around the gate, and signs would likely be needed near the entrance stating that no public motorized use is allowed on the route.

As discussed in Section 9.3.1, most existing dispersed sites at Packwood Lake do not meet ecological and associated managerial objectives and standards. The Forest Service will need to allow exceptions to management standards for the Packwood Lake area, or remove and rehabilitate dispersed sites that are currently located within 100 feet of the lake Shoreline. This will involve removal/rehabilitation of 16 dispersed sites along the non-Wilderness shoreline of Packwood Lake and 20 sites along the Wilderness shoreline of Packwood Lake. The seven non-Wilderness and Wilderness dispersed sites remaining are located within riparian reserves, therefore, some adjustments such as education, use limitations and increased maintenance may be needed to assure protection of the watershed and riparian processes and functions. Further relocation, vegetative screening and/or other adjustments or removal of the remaining sites may

also be required to ensure compliance with standards for visibility, density and vegetative loss. Activities within any remaining sites will require special care to assure compliance with ACS objectives.

Compliance with standards and the associated elimination of most of the existing dispersed sites around Packwood Lake, will require additional dispersed sites to accommodate existing and future recreation demand, or visitor use will need to be limited, and limits enforced, to prevent further visitor created camp sites. Generally, visitors who hike to lakes want to picnic or camp on the lake shoreline. The majority of Packwood Lake visitors surveyed in 2006 thought that moving camping areas away from the lake shoreline was a bad idea, demonstrating the difficulty in meeting both managerial standards and visitor demands.

Although there will be a need to provide additional dispersed camp sites if existing sites are eliminated, there is limited suitable area along the east side of Packwood Lake for dispersed sites that are in compliance with Forest Service standards. Steep slopes occupy nearly all of the east side of Packwood Lake and the southwestern quarter of Packwood Lake (Appendix B). Because of the steep terrain along the shoreline and other ecological concerns, such as wetlands along the southern end of Packwood Lake, appropriate space for camping is limited. Some concentrated camping could be provided near the old historic ranger station and at the site of the old resort and lodge. But these areas are not large enough to accommodate many dispersed sites 100 feet away from the shoreline. A few other areas along Trail #81 south of the Wilderness boundary could provide some space for camping at least 100 feet away from the shoreline, but could not accommodate many sites that could also meet the wilderness density requirements. Most of the west side of Packwood Lake does not have steep slopes. However, access to this area is more difficult.

Providing recreation opportunities at Packwood Lake, within the ecological and managerial constraints to meet visitor demands and needs, can be a difficult dilemma for Forest Service land managers. Wilderness objectives indicate that existing camp sites should be relocated or removed to allow maximum opportunity for solitude and to minimize the evidence of human use while prohibiting dispersed sites within 100 feet of the shoreline. Wilderness objectives also state that campsites should not be designated except as a last resort, visitor freedom within the Wilderness should be maximized, and direct controls and restriction should be minimized (FSM 2320). Although controls are allowed when they are essential for protection of the Wilderness resource and after indirect measures have failed, the overall objective of the Wilderness would not allow for designated and confined or suitably hardened camp sites within specific areas.

As demonstrated in the IAC (2003) and National Assessment (Cordell, 1999) studies, recreation use in the Pacific Northwest will generally increase if demand is met. However, statewide, primitive dispersed activities are under pressure due to environmental concerns, resulting in tighter management control and associated loss of opportunity. Limiting recreation opportunities (supply), through implementation and enforcement of management standards, will decrease demand, or visitor use, and associated ecological impacts at Packwood Lake.

In addition to management controls, visitor use can also be reduced through implementation of a restrictive permit system (Forest Service, 1998) or by reducing the number of parking spaces at

the Packwood Lake parking lot. During visitor surveys, visitors turned away when the parking lot was full.

If management controls are implemented, visitor education, and/or a Ranger on site may be needed to enforce Forest standards and prevent additional visitor creation of new dispersed sites along the shoreline. If management standards and controls are implemented and enforced at Packwood Lake, there will be very limited recreation opportunities at Packwood Lake.

There are a number of options and issues related to recreation needs at Packwood Lake. The analysis of recreation needs at Packwood Lake is complicated due to a number of factors including current visitor use, aquatic and wildlife habitat constraints, steep terrain along the Packwood Lake shorelines, general Forest and Wilderness standards, and future demand. The Forest Service, as the managing entity, is responsible for making the difficult decisions regarding recreation needs at Packwood Lake. Recreation use inevitably produces change in both the social and environmental setting, and the major task for managers is to decide the level of change considered applicable and acceptable and the actions (needs) consistent with protecting the area from changes in excess of those judged acceptable.

10.3 Suitability of Barrier Free Access

The Americans with Disabilities Act (ADA) was signed into law in 1990. This legislation mandated that a range of facilities be reasonably accessible to persons with disabilities. Currently the vault toilet and parking lot at the trailhead to Trail #78 and the Pipeline Road/Trail #74 are accessible. When reviewing the suitability for barrier free access to Packwood Lake the ADA and USDA guidelines were reviewed.

Title V Section 507c of the ADA applies to congressionally designated wilderness. It reaffirms the 1964 Wilderness Act and clarifies that agencies are not required to change the character of wilderness areas to provide accessibility. Section 507c also defines a wheelchair and states that wheelchairs meeting that definition can be used in congressionally designated wilderness.

In 2004, the Architectural and Transportation Barriers Compliance Board (Access Board) finished updating and merging the Uniform Federal Accessibility Standards (UFAS) and ADA accessibility guidelines. The combined *Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines* apply to all Federal, State, and local government facilities and to public accommodations. In November 2005, the General Services Administration (GSA), the standard-setting agency for Forest Service facilities, adopted the ABA portion of the combined guidelines. The Architectural Barriers Act Accessibility Standard (ABAAS) is the name given by the GSA to the standards the Forest Service must follow. The ABAAS became effective on May 8, 2006. All of these guidelines and standards focus on facilities in highly developed areas, such as cities, towns, and major tourist attractions. With the exception of boating facilities and fishing piers and platforms, they do not provide direction for the construction or renovation of outdoor recreation areas and trails managed for hiker or pedestrian use.

In 1993, the Forest Service developed *Universal Access to Outdoor Recreation: A Design Guide* (called the Design Guide), which contains accessibility guidelines for the outdoor recreation

environment (PLAIS, 1993). The applicability of the provisions in the *Design Guide* was based on the Forest Service's recreation opportunity spectrum (ROS). Under this approach, the degree of modification for accessibility in a given area reflected that area's level of development, resulting in a spectrum of opportunities for all people with the diversity of challenge and risk that is inherent in the outdoor recreation environment. The *Design Guide* also incorporated the universal design policy of developing programs and facilities to serve all people, to the greatest extent possible. The goal of universal design is to ensure integration of all people, without separate or segregated access for people with disabilities. Under the Forest Service's universal design policy, with few exceptions, new or altered facilities and associated constructed features in recreation areas are required to be accessible, rather than only a certain percentage of those facilities.

In 2005, the Forest Service developed guidelines for both trails and outdoor recreation facilities that would apply only in the National Forest System and that would comply with the public notice and comment process for Forest Service directives pursuant to 36 CFR Part 216. The 2006 Forest Service's guidelines are in two parts: the *Forest Service Outdoor Recreation Accessibility Guidelines* (FSORAG) and the *Forest Service Trail Accessibility Guidelines* (FSTAG).

The purpose of the FSORAG and FSTAG are to provide guidance for maximizing accessibility, while protecting the unique characteristics of the natural setting. The FSORAG applies to new and altered outdoor recreation access routes (motorized and non-motorized), beach access routes, and developed camping and picnicking areas, and other constructed features. Pedestrian (non-motorized hiking trails are addressed in the FSTAG.

In contrast to the *Design Guide*, applicability of the FSORAG and FSTAG is not determined by the ROS, and complying with the FSORAG and FSTAG does not always result in trails that are accessible to all persons with disabilities. In some instances accessible features are not appropriate due to characteristics of the natural environment, such as terrain, soils, and hydrology; would be impractical due to terrain or prevailing construction practices; and could significantly and unacceptably alter the nature of the outdoor experience.

Current access routes to the Packwood Lake area (Trail #78 and Pipeline Road/Trail #74) traverse through both Roded Natural, Semi-primitive and primitive settings to Packwood Lake. Packwood Lake is located within semi-primitive and primitive settings. Both routes have difficult terrain, steep slopes and unstable soils. Compliance with the FSORAF and FSTAG's technical provisions would require extensive cuts or fills, that would be difficult to construct and maintain, and would cause drainage and erosion problems. Some of the soils along the routes are susceptible to erosion and would require techniques that are incompatible with the natural drainage and existing soil. Compliance with the provision requiring a firm and stable surface might not be possible to maintain.

Construction of barrier free access to Packwood Lake "would be impractical" as referred to in the guidelines, because the effort and resources required to comply would be disproportionately high relative to the level of access established.

11.0 CONCLUSIONS

Historically, and prior to development of the Packwood Lake Hydroelectric Project, Packwood Lake has been a popular recreation destination. The greatest visitor use occurred from 1921 to 1991, when the Forest Service oversaw a permitted resort at Packwood Lake. Although visitor use at Packwood Lake significantly decreased since the resort's removal by the Forest Service in 1992, Packwood Lake is still a popular destination for day use and camping, especially during peak-season weekends.

Over the years, numerous dispersed sites have been created along the Packwood Lake non-Wilderness and Wilderness shorelines because of visitors' desires to recreate near the Lake and because steep slopes along most of the Packwood Lake shoreline limit placement of sites elsewhere. Currently visitors use these sites for overnight camping as well as day-use activities, including visiting the beach, swimming, and shore fishing.

Remains of the old resort, including two pit toilets within the non-Wilderness area along Packwood Lake continue to be used, although they are not maintained and are out of compliance with Forest Service standards. Another portable toilet installed more recently by the Forest Service near the old historic ranger station is situated in a swampy area and has not been serviced in the last couple of years.

National and state projections of recreation growth indicate that visitor use will generally increase, if demand is met. However, regional studies have indicated that demand may not be met due to increased environmental concerns, especially water quality and wildlife habitat, and associated tighter management controls that will result in loss of opportunities, or reduced supply, for dispersed recreation use.

With evolving concerns for the Forest communities, especially in Wilderness areas, related to human impacts and associated social and ecological changes to the Forest setting, implementation of management controls is desired. However, implementation can be difficult, at best, in settings such as Packwood Lake, where visitors want to camp or spend the day along the shoreline while Forest standards prohibits dispersed sites within 100 feet of the shoreline. Although Wilderness standards encourage visitor freedom, and minimal controls and restrictions, lack of control or enforcement will inevitably result in continued visitor created dispersed campsites along the lake shoreline.

The need to address ecological concerns and associated managerial standards may change the visitor experience and/or significantly reduce the ability to recreate at Packwood Lake. The Forest Service will need to allow exceptions to management standards for the Packwood Lake area or visitor use will need to be limited, and limits enforced, to prevent further visitor created dispersed camp sites. Compliance with management standards will result in few dispersed sites near Packwood Lake and will reduce recreation opportunities and use in the area. Consequently, significant reductions in recreation use at Packwood Lake may reduce the need for new toilets and potential trash collection or education options to alleviate the current sanitation concerns at Packwood Lake. Since the Forest Service mandates the type of use on the Pipeline Road/Trail #74, the Forest Service will need to decide whether to continue to allow or disallow motorized

use of this route. Management decisions will need to be made by the Forest Service to balance the level of impacts to the environment as well as to recreation visitors.

Due to the dispersed nature of the Packwood Lake area and ecological concerns, barrier free access to this area is likely not a feasible or practical option.

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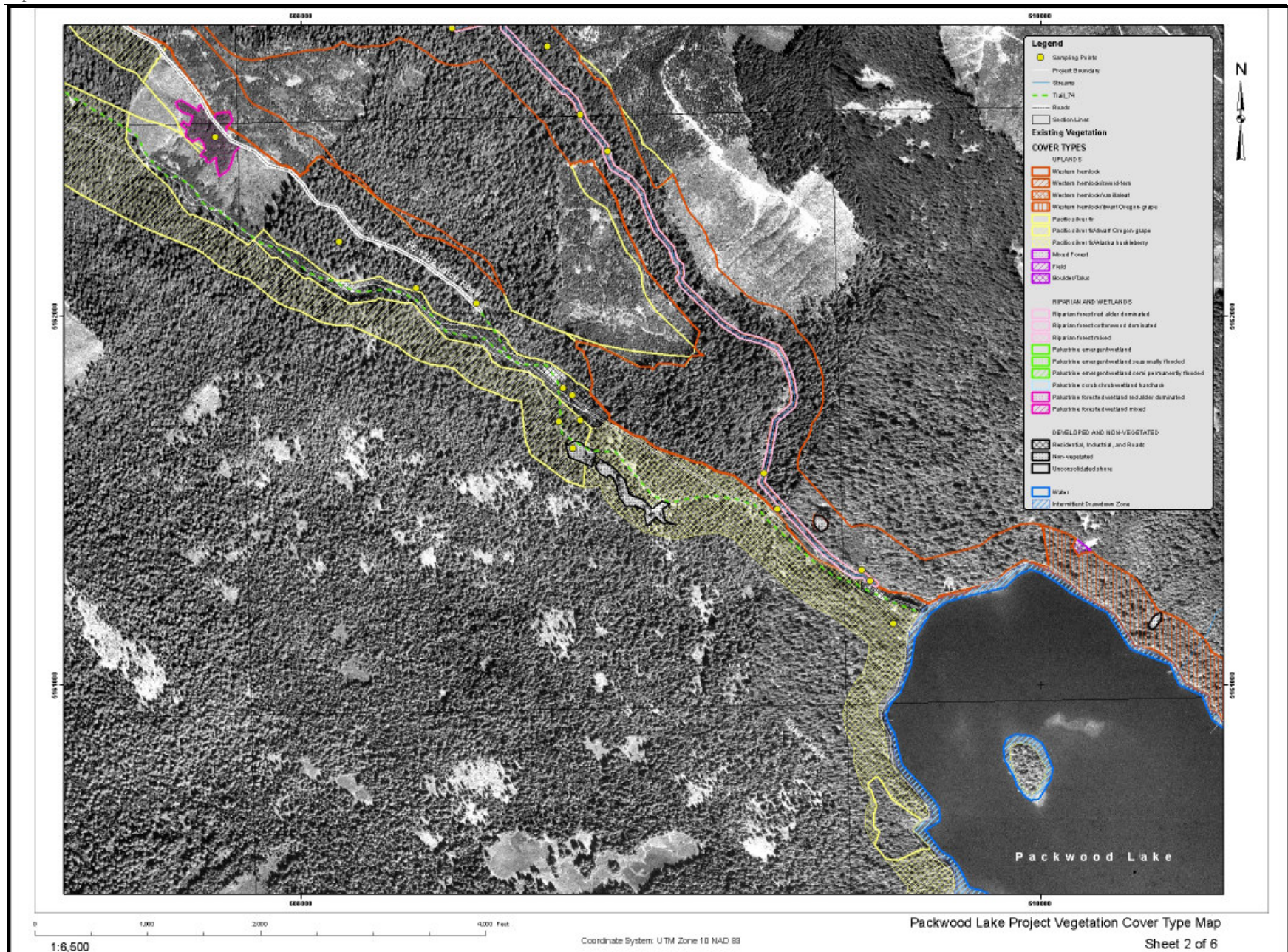
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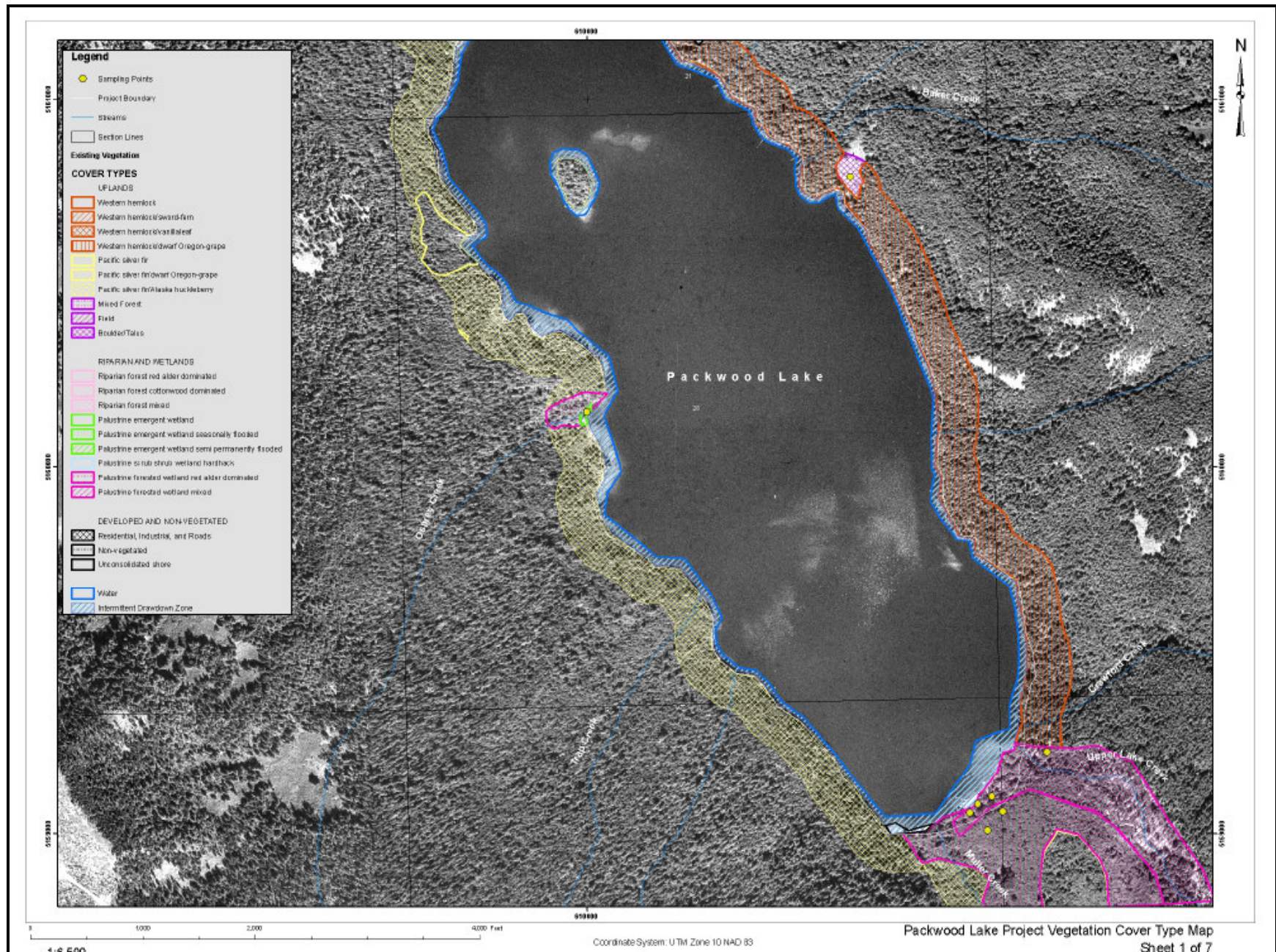
APPENDIX A

VEGETATION COVER TYPE MAP

Packwood Lake Project Vegetation Cover Type Maps

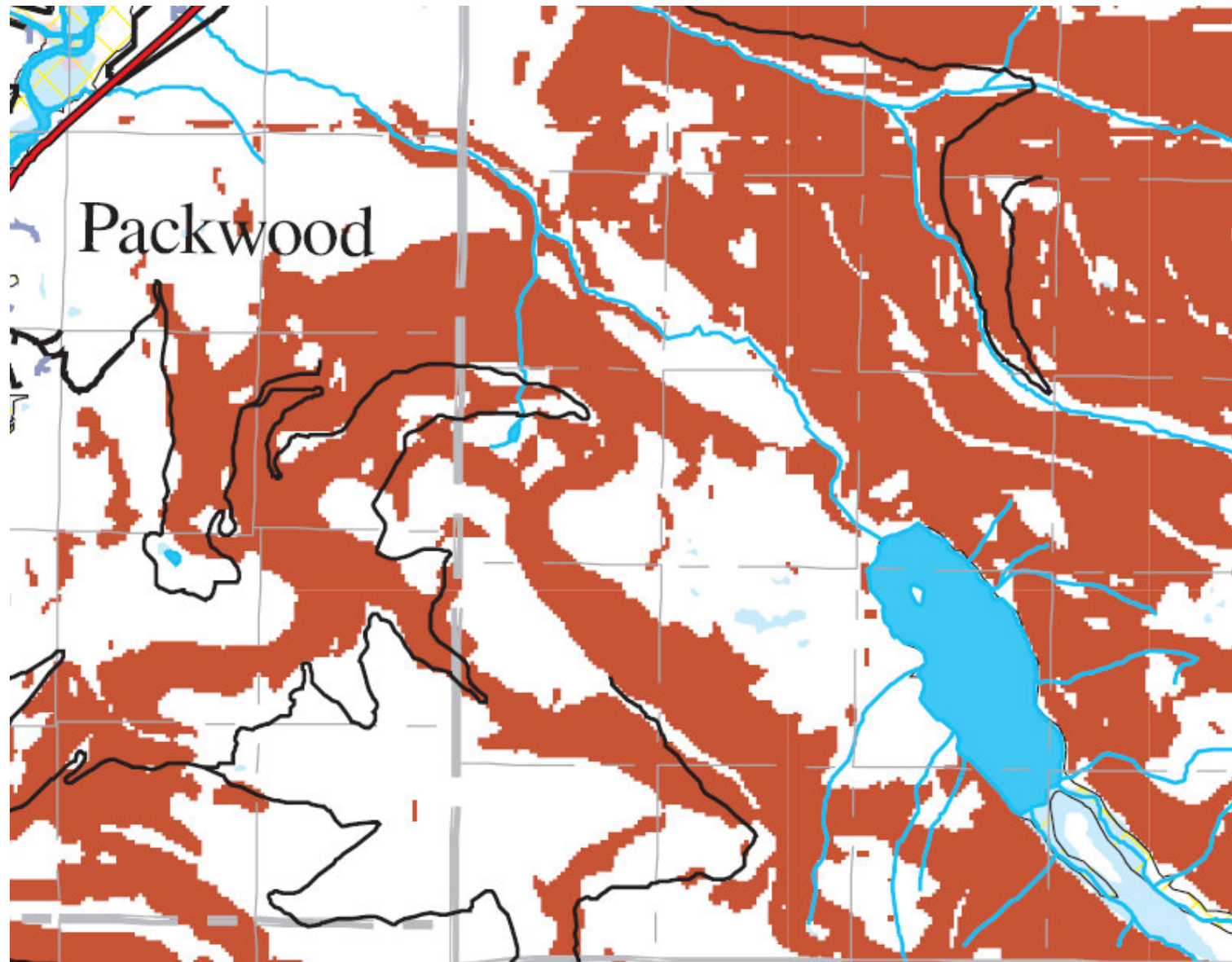






APPENDIX B

PACKWOOD LAKE STEEP SLOPES



Source Lewis County, 2002

