Appendix A: Acronyms

Acronym	What it means	Agency
100 Ac LSR	100 Acre Late Successional Reserve *(from ROD of NWFP)*	USFS & BLM
ACS	Aquatic Conservation Strategy	
APHIS	Animal Health and Plant Inspection Service	USDA
ARP	Aggregate Recovery Percentage	USFS
ATM	Access and Travel Management Plan	USFS
BEHA	Bald Eagle Habitat Area	BLM
BGEA	Big Game Emphasis Area	USFS
BLM	USDI Bureau of Land Management	
CCC	Civilian Conservation Corps	
CCS	Cryptocrystalline Silicate (Archaeology)	
cfs	cubic feet per second	
CMP	Corrugated Metal Pipes (Engineering)	
COE	United States Army Corps of Engineers	COE
CON	Connectivity Block	BLM
CTI	Central Tire Inflation (Engineering)	
CWD	Coarse Woody Debris	
DBH	Diameter Breast Height	
DDR	District Designated Reserves	BLM
DEIS	Draft Environmental Impact Statement	USFS
DEQ	Department of Environmental Quality	
DFC	Desired Future Condition *(Fisheries)*	USFS
EIS	Environmental Impact Statement	
ESA	Endangered Species Act	
FSEIS	Final Supplemental Environmental Impact Statement	
GFMA	General Forest Management Area	
GIS	Graphic Information Systems	
GLO	Government Land Office	

Acronym	What it means	Agency
GTR	Green Tree Retention	USFS & BLM
KV	Knudsen-Vandenburg Act	USFS
LAC	Limits of Acceptable Change	USFS
LRFD	Lowell Rural Fire District	
LRMP	Land and Resource Management Plan	USFS
LSOG	Late successional Old-Growth Seral Stage	
LUA	Land Use Allocation	
LWD	Large Woody Debris	
LWM	Large Woody Material	
MLSA	Managed Late successional Areas	USFS & BLM
MSL	Mean Sea Level	
NRMS	Natural Resource Management System	COE
NWFP	Northwest Forest Plan	USFS & BLM
O & C	Oregon and California Revested Lands	
ODF	Oregon Department of Forestry	
ODFW	Oregon Department of Fish and Wildlife	
OHV	Off Highway Vehicle	
OMP	Operational Management Plan	COE
OSP	Oregon State Police	
PACFISH	*Refers to an inter-regional, inter-agency strategy to provide habitat conditions that contribute to the conservation and restoration of naturally-reproducing stocks of pacific salmon and anadromous trout.*	
PD	Public Domain	
PNW	Pacific Northwest (Research Station)	USFS
PSUB	Planning Subdrainage	USFS
RI	Recurrence Interval (Hydrology)	
RMP	Resource Management Plan	BLM
ROD	Record of Decision	USFS
RR	Riparian Reserves	
RRA	Riparian Reserve Area	

Acronym	What it means	Agency
RUO	Resource Use Objectives	COE
RVD	Recreation Visitor Days	
S & G	Standards and Guidelines	
SCORP	State Comprehensive Outdoor Recreation Plan	
SCS	Soil Conservation Service	
SE	Stem Exclusion Seral Stage	
SEIS	Supplemental Environmental Impact Statement	USFS & BLM
SI	Stand Initiation Seral Stage	
SRI	Soil Resources Inventory *(Soils)*	USFS
TMDL	Total Maximum Daily Loads *(Hydrology)*	
UDV	Unit Day Value	COE
UR	Understory Reinitiation Seral Stage	
USDA	United States Department of Agriculture	
USDI	United States Department of Interior	
USFS	United States Forest Service (USDA)	
USFWS	United States Fish and Wildlife Service (USDI)	
USGS	United States Geological Survey	
WIN	Watershed Improvement Needs	USFS

APPENDIX B: FIRE AND FUELS

ODF and LRFD protected lands

Figure B- 1. Number of Fires 1932-1995

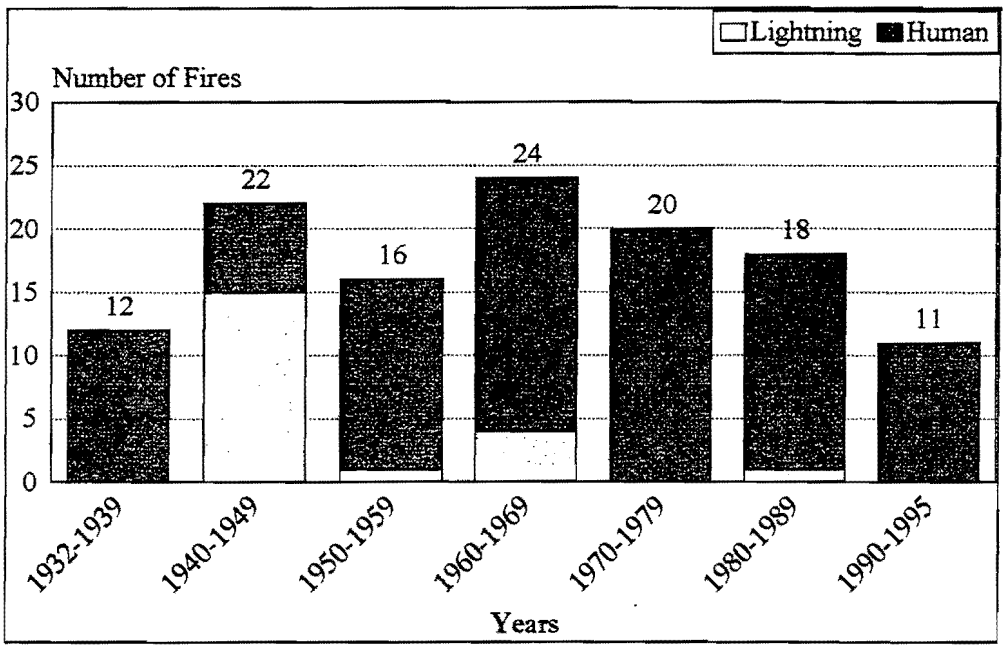
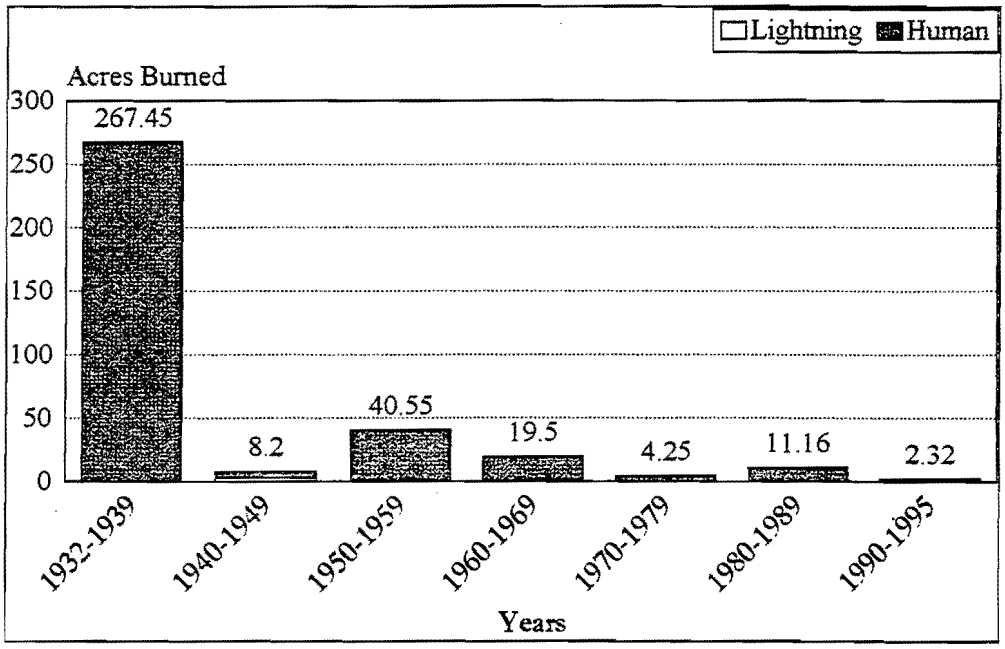


Figure B- 2. Acreage Burned by Fires 1932-1995



USFS lands

Figure B- 3. Number of Fires 1949-1995

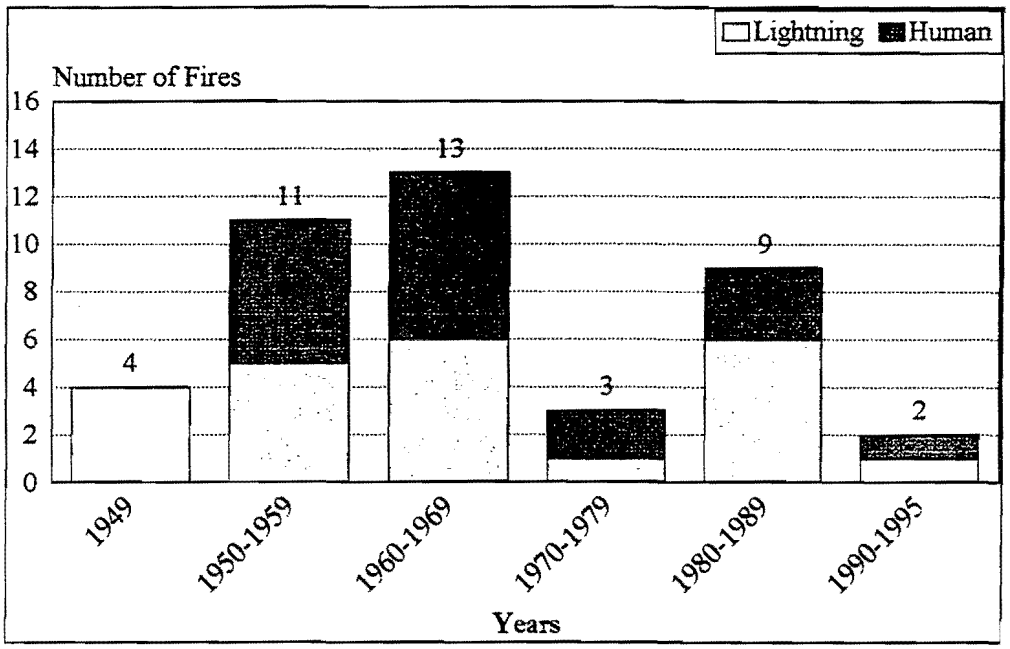


Figure B- 4. Acreage Burned by Fire 1949-1995

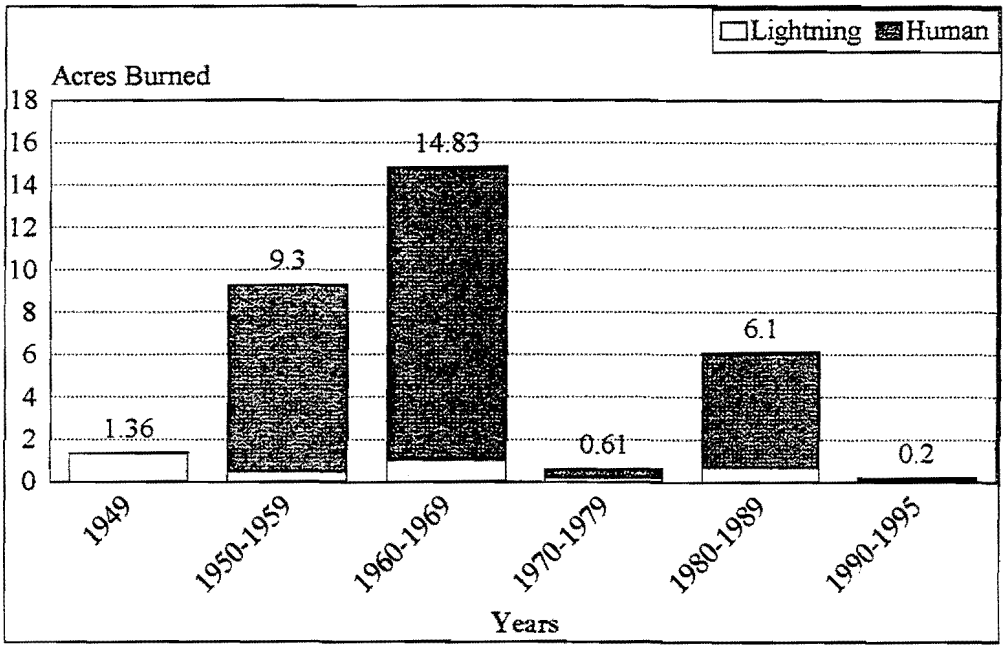


Table B- 1. Comparison of Amount of Seral Stages in Reference and Current Conditions

Seral Stage	Stand Initiation				Stem Exclusion				Understory Reinitiation				Late successional Old-Growth			
	Reference		Current		Reference		Current		Reference		Current		Reference		Current	
Drainage	Ac	%	Ac	%	Ac	%	Ac	%	Ac	%	Ac	%	Ac	%	Ac	%
Brush Creek	691	26.4	985	37.6	9	.3	947	11.2	0	0	198	7.5	1904	72.7	947	36.2
Lower South Fork Winberry Cr	4503	91.7	909	18.5	1.5	<0.0	42	0.9	148	3	3701	75.3	242	4.9	247	4.9
North Reservoir	1665	21.2	3298	41.9	375	4.8	936	11.9	0	0	1777	22.6	5010	63.7	0	0
South Reservoir	3323	24.7	6768	50.4	3320	24.7	3444	25.6	209	1.6	1935	14.4	5079	37.8	72	0.5
North Fork Winberry Cr	840	13	2237	34.7	0	0	1438	22.3	1180	18.3	527	8.2	4321	67.1	2140	33.2
Upper South Fork Winberry Cr	1742	20.2	2412	28.0	0	0	1374	16	1384	16.1	1450	16.8	5259	61.1	3150	36.6

Table B- 2. Non-forested Lands: Reference compared to Current Conditions

Seral Stage	Other *(Non-Forested Lands)*			
	Reference		Current	
	Ac	%	Ac	%
Brush Creek	16	0.6	16	0.6
Lower South Fork Winberry Creek	18	0.4	18	0.4
North Reservoir	812	10.3	1851	23.6
South Reservoir	1508	11.2	1219	9.1
North Fork Winberry Creek	102	1.6	101	1.6
Upper South Fork Winberry Creek	225	2.6	225	2.6

Table B- 3. Fires on ODF and LRFD Protected Lands by Decade

Decade	Lightning Caused		Human Caused		Total Fires	
	Number	Acres	Number	Acres	Number	Acres
1932-1939	0	0	12	267.45	12	267.45
1940-1949	15	2.85	7	5.35	22	8.2
1950-1959	1	0.25	15	40.3	16	40.55
1960-1969	4	0.4	20	19.1	24	19.5
1970-1979	0	0	20	4.25	20	4.25
1980-1989	1	0.1	17	11.06	18	11.16
1990-1995	0	0	11	2.32	11	2.32
Total	21	3.6	102	349.83	123	353.43
Percent	17%	1.02%	83%	98.98%		

Table B- 4 Fires on USFS Protected Lands by Decade

Decade	Lightning Caused		Human Caused		Total Fires	
	Number	Acres	Number	Acres	Number	Acres
1932-1939	*No Data*					
1949 only	4	1.36	0	0	4	1.36
1950-1959	5	0.5	6	8.8	11	9.3
1960-1969	6	1.03	7	13.8	13	14.83
1970-1979	1	0.2	2	0.41	3	0.61
1980-1989	6	0.7	3	5.4	9	6.1
1990-1995	1	0.1	1	0.1	2	0.2
Total	23	3.89	19	28.51	42	32.4
Percent	55%	12.01%	45%	87.99%		

APPENDIX C: VEGETATION

Forest Successional Development

Succession describes the progression of vegetative communities following events that change or alter the original community. Eventually the original community is restored and remains reasonably stable and constant until the next disturbance event. In the Pacific Northwest, the dominant species are so long-lived that the probability of succession restoring the original community before another disturbance event takes place is low.

The following is a general description of various successional stages. Ages may differ with different specific site conditions and species, but the overall stand level dynamics and interactions are well documented.

Stand Initiation Seral Stage (SI)

This seral stage occurs from the time of disturbance exposing bare ground to with conifer or hardwood saplings. Domination of the site by hardwood and/or conifer saplings typically occurs about 15 years after disturbance. The first two to five years are usually dominated by grasses, forbs, and herbaceous vegetation followed by shrubs and/or hardwoods. Species diversity is highest in this seral stage and biomass is relatively low, but increases rapidly throughout the stage. Conifers develop slowly at first but gradually become dominant. Once conifer dominance occurs and crowns close to fully occupy the site, then this early seral stage is concluded. Stands currently in this seral stage have developed as a result of human-caused disturbance (forest management) not from natural disturbances.

Stem Exclusion Seral Stage (SE)

This stage is distinguished by dominance of conifers. Sites are characterized by a dense conifer stand, a closed canopy with crown cover ranging from 60-100%, and a relatively low level of understory vegetation.

The overstory trees grow very rapidly and begin to lose their lower, deeply shaded foliage and branches. Stem growth slows and its form becomes more tapered. As individual trees within the stand differ in growth rates and occupy different amounts of growing space, some trees gain a competitive advantage. Since the overstory grows very rapidly, the larger more dominant trees begin to encroach upon the growing space of smaller less competitive individuals. This process, called stand differentiation, is generally manifested first in diameter differences and later in height differences. Stand differentiation creates a stand with individual trees of different crown sizes and positions, as well as different heights and diameters. This allows for a classification of individual trees by canopy position or crown class: dominants, codominants, intermediates, and overtopped or suppressed.

In most cases, species diversity decreases. Size and number of snags and coarse woody debris is dependent upon the stand origin. Managed stands created by forest management during the past decades tend to be devoid of large snags and downed logs. However a large number of small snags are present. These snags are created by stand differentiation and competition mortality and tend to be the smaller sized trees in intermediate and overtopped crown classes. Natural stands may have a greater number of snags and large downed logs, legacies from the original forest, as well as high amounts of small snags and downed logs created by competition mortality. These existing natural stands tend to have limited numbers of large snags as a result of past fire management policies, but still have some levels of downed logs.

Understory Reinitiation Seral Stage (UR)

This stage is typically characterized by openings in the dominate canopy and a secondary pole size understory with a corresponding increase in forbs and shrubs. Stand diversity is gradually increasing in response to openings in the canopy created by windthrow, disease, insects, and stand mortality. Biomass is increasing but at a relatively slow rate. Stands provide different wildlife habitat than smaller sized stands.

These stands typically have large numbers of small diameter snags and downed logs resulting from stand density and competition related mortality. Large diameter snags and downed logs, legacies from the previous forest, tend to be few in number, limited in distribution, and those present are typically in more advanced decay classes. The number of legacy and small diameter snags and downed logs tends to be greater in naturally regenerated stands. Past management activities and silvicultural treatments, such as precommercial and commercial thinning, tend to decrease the number of small snags and downed logs present in these stands.

Late Successional Old-Growth Seral Stage (LSOG)

This stage typically occurs after 195 years and represents climax and subclimax plant communities. The subclimax condition may persist for centuries depending on the frequency of natural disturbances. Both in climax and subclimax condition, old-growth is characterized by two or more tree species with a wide range of size and age including long-lived seral dominants, decadence of the long lived dominants, a deep, multi-layered canopy, significant amounts of snags and downed logs, and openings or gaps in the canopy. More tolerant conifers (western hemlock and western red cedar) and/or shrub species are found in the understory or in gaps and openings caused by windthrow or other disturbance. Old-growth stands provide optimal habitat for saprophytic plants, lichens, mosses, and liverworts. Biomass reaches a maximum and species diversity approaches the level found in early seral stages.

Table C- 1 Current Seral Stages of all lands in Winberry/Lower Fall Creek Watershed

Seral Stage	Age (years)	Area (acres)	Area (%)
Stand Initiation	0 - 30	13,982	31.9
Stem Exclusion	31 - 80	11,136	25.4
Understory Reinitiation	81 - 200	8,851	20.2
Late Successional Old-Growth	200+	6,553	14.9
Non-Forest		1,680	3.8
Fall Creek Reservoir		1,688	3.8
	TOTAL	43,890	100 %

Table C- 2. Federal Ownership by Drainage

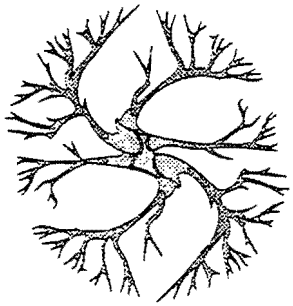
Drainage	USFS	% in Drainage	BLM	% in Drainage	COE	% in Drainage	Total
Brush Creek	2,604	99%	14	1%	0	0%	2,618
Lower South Fork	4,622	100%	0	0%	0	0%	4,622
North Reservoir	0	0%	756	41%	1,068	59%	1,824
North Fork Winberry	6,443	100%	0	0%	0	0%	6,443
South Reservoir	316	11%	2,072	69%	607	20%	2,995
Upper South Fork Winberry	8,611	100%	0	0%	0	0%	8,611
Fall Creek Reservoir	—	—	—	—	1,641	—	1,641
Total	22,596	78%	2,842	10%	3,316	12%	28,754

Table C-3. Current Seral Condition, Federal Lands

Seral Stage	USFS	BLM	COE	Total	Percent
SI	6,422	702	1,119	8,243	30.4%
SE	3,340	1,012	112	4,464	16.5%
UR	5,926	1,113	276	7,315	27.0%
LSOG	6,537	7	0	6,544	24.1%
Reservoir	0	0	1,641	1,641	N/A
Non Forest	371	8	168	547	2.0%
Total	22,596	2,842	3,316	28,754	100%
Percent	78.6%	9.9%	11.5%	100%	

Table C-4. Reserved Forested Acres (80+ Years) on Federal Lands

Drainage	Total Acres	80+ Reserved	% of Drainage	USFS	% of Drainage	BLM	% of Drainage
Brush Creek	2,618.9	692.7	26.5%	692.7	26.4%	0	0%
Lower South Fork	4,636.9	2,140.8	46.2%	2,140.8	46.2%	0	0%
North Reservoir	748.7	205.7	27.5%	0	0	205.7	27.5%
North Fork Winberry	6,443.4	1,506.9	23.4%	1506.9	23.3%	0	0%
South Reservoir	2,714.8	556.4	20.5%	154.4	5.6%	402.0	14.8%
Upper South Fork Winberry	8,611.0	2,512.1	29.2%	2,512.1	29.2%	0	0%
Total	25,773.7	7,614.6	29.5%	7,006.9	27.1%	607.7	2.4%



Appendix D: Wildlife

Table D-1. Northern Spotted Owl Reproductive History and Home Range Acres

		MSNO	1039 (CHU)	0054 (Matrix)	0065 (Matrix)	1023 (Matrix)	1037 (Matrix)	2855 (Matrix)	2856 (Matrix)	2871 (Matrix)	2886 (Matrix)
		Geographic Name	Lower South Winberry Creek	Cabin Creek	Blanket-Monterica Cr.	Lower Brush Creek	South Fork Winberry Creek	Cabin Creek North	Blanket Creek	Station Butte	Brush Creek
REPRODUCTIVE HISTORY	YEARS	1970									
		1971									
		1972						PN2			
		1973						PX	S		
		1974						S			
		1975									
		1976									
		1977									
		1978									
		1979									
		1980					PU	PU	S		2
		1981		PN1			PU				PU
		1982		PU			S				
		1983									
		1984									
		1985									
		1986									
		1987									
		1988									
		1989	S		2				S	PN2	PU
		1990		PN1	PN1		PU	PN2	PN1	PU	PN1
		1991	PU	PU	S (night resp.)	S	S	PU	PU	PN1	
		1992	PNU	PN2	PNU	PN1	PN1	S (night resp.)	PN1	PN2	PN2
		1993		PNU	PX	PU			PX	S (night resp.)	PN1
		1994		PU		PX				PU	PU
		1995		S	PU			S (night resp.)	S (night resp.)	S	S
		1996	PN*	PU*	PU*		PN*	S (night resp.)			
TAKE STATUS	7 Mile Radius	<30%									
		30 - 40	394.73								
		40 - 50									435.02
		>50%		525.50**	759.31**	720.80	505.94	522.22	554.71	778.82	
	1.2 Mile Radius	<30%									
		30 - 40									
		40 - 50	1227.72				1441.46	1313.26	1339.67		1294.54
		>50%		1460.76**	2068.93**	1817.50				2152.40	

Table D-2 *(continued)*. Northern Spotted Owl Reproductive History and Home Range Acres

		MSNO	2896 (Matrix)	2898 (Matrix)	3406 (Matrix)	L602	0120 BLM)	1943 (Private)	2135 (Private)
		Geographic Name	Winberry-Armet Cr	Spring Creek	Burma	Cabin Winberry		φ-1	φ-2
REPRODUCTIVE HISTORY	YEARS	1970							
		1971							
		1972							
		1973							
		1974							
		1975							
		1976							
		1977							
		1978							
		1979							
		1980							
		1981							
		1982							
		1983							
		1984							
		1985							
		1986							
		1987							
		1988							
		1989							
		1990	PX	S					
		1991		PN1					
		1992		PN1	PU				
		1993		PU	PX				
		1994		PN1					
		1995	S (night resp.)						
		1996				PN*			
TAKE STATUS	.7 Mile Radius	<30%						142	
		30 - 40							
		40 - 50		489.51			400		
		>50%	826.92		532.85	563.5			
	1.2 Mile Radius	<30%					593	702	
		30 - 40		1143.87					
		40 - 50			1312.67				
		>50%	2219.91			1660.6			

DEFINITIONS FOR REPRODUCTIVE HISTORY AND TAKE STATUS:

Reproductive History

Site Status P = Pair,
S = Single,
"blank" = unknown or not surveyed,
= number of birds, status unknown

Nesting Status N = Nesting,
X = Non nesting,
U = Unknown nesting (either surveyed with unknown results or not surveyed),
Z =Failed

Reproductive Status # = Number of young produced,
U =Unknown
* - Still under survey at this time

Take Status

Take is defined by USFWS as either
1) Less than 50% (500 ac.) suitable spotted owl habitat remaining within >.7 mile home range radius of the activity center or
2) Less than 40% (1182 ac.) suitable spotted owl habitat remaining within 1.2 mile home range radius of the activity center

CHU = Critical Habitat Unit

φ-1 -- 70 acre core shared by BLM *and* private ownership

φ-2 -- 70 acre core established on private lands. 1.2 and .7 mile home range acres not managed for.

Table D- 2. USFWS Threatened, Endangered, Sensitive, and Category 1 & 2 Species; ROD Survey and Manage (C-3) Species; Appendix J2 Species and Other Species of Concern

Species (*scientific name*)	Regional Foresters Sensitive Species List	Federal Register Notice of Review	ROD Table C-3 Survey and Manage Species (√)	Appendix J2 Species of Concern (√√)
Amphibians and Reptiles				
Northern red legged frog (*Rana aurora aurora*)	S	C2		
Northwestern pond turtle (*Clemmys marmorata marmorata*)	S	C2		
Spotted frog (Western pop.) (*Rana pretiosa*)		C1		
Tailed frog (*Ascaphus truei*)		C2		√√
Foothill yellow-legged frog (*Rana boylii*)		C2		
Cascades frog (*Rana cascadae*)		C2		
Southern torrent (seep) salamander (*Rhycotriton variegatus*)		C2		√√
Cascade torrent (seep) salamander (*Rhycotriton cascadae*)				√√
Clouded salamander (*Aneides ferreus*)				√√
Oregon slender salamander (*Batrachoseps wrighti*)				√√
Birds				
American peregrine falcon (*Falco peregrinus anatum*)	S	E		
Northern bald eagle (*Haliaeetus leucocephalus*)	S	T		
Northern spotted owl (*Strix occidentalis caurina*)	S	T		
Ferruginous hawk (*Buteo regalis*)	S	C2		
Harlequin duck (*Histrionicus histrionicus*)	S	C2		
Northern goshawk (*Accipiter gentilus*)		C2		
Greater sandhill crane (*Grus canadensis*)	S			
Common merganser (*Mergus merganser*)				√√
Great gray owl (*Strix nebulosa nebulosa*) ROD **species of concern w/ protect. buffer**				

(S) = Species identified on Regional Forester Sensitive Species List
(√) = Survey and manage species identified in the ROD under Table C-3
= Sp Concern recognized in Appendix J2 of ROD

Federal Register Notice of Review classifications:
(E) = Endangered (T) = Threatened
(C1) = Category 1: Taxa for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.
(C2) = Category 2: Taxa for which existing information ir s "may wa ling," but for which substantial biological information to support a ed rule is .

Table D-2. *(continued)*

Species (*scientific name*)	Regional Foresters Sensitive Species List	Federal Register Notice of Review	ROD Table C-3 Survey and Manage Species (√)	Appendix J2 Species of Concern (√√)
Mammals				
California wolverine (*Gulo gulo luteus*)	S	C2		
White footed vole (*Arborimus alpies*)	S	C2		
American marten (*Martes americana*)				√√
Pacific fisher (*Martes pennanti pacifica*)		C2		√√
Oregon red tree vole (*Phenacomys longicaudus*)			√	√√
Pacific western big-eared bat (*Plecotus townsendii townsendii*)	S	C2		
Long eared myotis (*Myotis evotis*)		C2		√√
Yuma bat (*Myotis yumanensis*)		C2		
Fringed myotis (*Myotis thysanodes*)		C2		√√
Long legged myotis (*Myotis volans*)		C2		√√
Hoary bat (*Lasiurus cinerus*)				√√
Silver haired bat (*Lasionycteris noctivagens*)				√√
Arthropods				
Beer's false water penny beetle (*Acneus beeri*)	S	C2		
Mt. Hood primitive brachycentrid caddisfly (*Eobrachycentrus gelidae*)	S	C2		
Tombstone prairie faralan caddisfly (*Farula reaperi*)	S	C2		
Fort Dick limnephilus caddisfly (*Limnephilus atercus*)	S	C2		
Tombstone Prairie oligophlebodes caddisfly (*Oligophlebodes mostbento*)	S	C2		
One-spot rhyacophilan caddisfly (*Rhyacophila unipunctata*)	S	C2		
Molluscs				
Prophysaon coeruleum			√	√√
Prophysaon dubium			√	√√

APPENDIX E: AQUATIC HABITAT

WINBERRY CREEK

(Forest Service Boundary to the confluence of North and South Fork Winberry)

Reach 1:

This reach is a 'B3' (cobble) and 'B4' (gravel) Rosgen stream typing. The 1802 road constricts the channel along its right bank (looking downstream). Much of the LWD was removed by past salvage activities. The channel has downcut resulting in a much wider and shallower stream without much meander. Subsequently, instream log and boulder structures were installed to help restore the aquatic habitat. These human-made structures have increased the channel complexity. A channel previously scoured to bedrock is now starting to collect debris. More pools are forming and hiding cover has increased. LWD per mile is still determined to be low, although this is because much of the wood installed did not meet the criteria as LWD in the stream survey protocol.

Although pools per mile have increased they are still considered low. Some areas are still scoured to bedrock. A five-foot bedrock slide in this section was noted to be at least 15 feet high in the 193? stream inventory, and the end of anadromous fish use. Since this is the only reference, it is an unconfirmed possibility that salmon were not able to migrate past this area. Riparian condition consists of large trees, but the road within the riparian reserve opens the canopy and has negative effects on the stream channel. Channel stability is fair, with some mass wasting and bank cutting found along the left bank. Observed fish were primarily cutthroat with a few rainbow. The larger pools are good adult holding habitat. A couple of 10-12 inch trout were observed. Spawning is also thought to occur here, with cobble and gravel the dominant and subdominant substrate. Sculpin and dace are found through out this reach.

NORTH FORK WINBERY CREEK

Reach 1

This reach is a 'B3' (cobble) and 'B4' (gravel) Rosgen stream typing. Similar impacts have resulted in the North Fork Winberry Creek as those observed downstream in Winberry Creek. However, here the stream is much smaller and has a steeper gradient. Log and boulder structures were installed throughout the reach which now has increased pool habitat, channel complexity and provides more cover. Pools per mile are considered adequate according to the criteria; however the pool:riffle ratio is high at 47:50. This indicates pool habitat is in good condition. The amount of large wood per mile is determined to be low since many of the installed logs do not meet the protocol criteria. Despite the smaller size, they are still very effective for this stream. Substrate is predominantly cobble and gravel; fines do not appear to be a problem. Some areas are

still scoured to bedrock but the installed log structures have improved these conditions. Riparian conditions are good consisting primarily of large trees. The road within the riparian reserve does have negative impacts and this area has a larger small tree component to the seral condition than found downstream. Cedar is found to be more dominant here. Temperatures were taken throughout the survey ranging from 54-63°F. The highest was recorded to be 63°F at 1500 hours on 7/17/95. Rainbow trout, cutthroat trout, banded sculpin, and crawfish were present throughout the reach. Several 8-10 inch trout were observed along with many fry upstream and downstream from the confluence of Minnehaha Creek. This may be an important spawning area.

Reach 2:

This reach begins at the confluence of Blanket Creek. It is a type 'B' channel beginning to grade into a type 'A'. Cobble and gravel were the dominant and subdominant substrate types at the wolman pebble count area but small boulder and cobble were determined to be the dominant and subdominant substrate type throughout the reach. Instream structures have not been installed in this reach. Pieces of LWD per mile and pools per mile are moderate. Road 1802 is within the riparian reserve for the first 0.5 miles of this reach. The road then crosses the channel creating a migration barrier with a 7.5 ft. falls. Fish are found approximately two miles above this barrier. Parts of this reach have small floodplain areas and side channels that appear to be functioning well. The inner riparian habitat of hardwoods is fairly wide at 40 feet. The outer riparian conifers consist of 47% large trees and 43% small trees. A clearcut located along the upper part of the reach is responsible for the small tree component. Braided riffles are commonly found and it appears that the coarse debris is more often transported down the channel. Mass wasting is fairly common along the banks although most of the area is well armored. Rainbow and cutthroat trout are the only fish species found in this reach. The reach ends at another stream crossing posing a possible migration barrier to smaller fish.

Reach 3

This is a type 'A' channel with cobble and gravel as the dominant and subdominant substrate. Cobble embeddedness appears to be a higher concern in this reach than previously. The large wood and pools per mile components are low. Road 1821 affects the first part of this reach, contributing some areas of mass wasting. Riparian condition is primarily in a sapling pole condition and considered poor. Large trees are found adjacent to the channel in the reach's lower section. A very large and dense patch of devils club was found at the top of the reach. It was so thick the stream surveyors had to skip this portion (approximately 800 feet). The reach ended at a 30 foot waterfall which also confirmed the end of fish use. Downstream of this falls, rainbow and cutthroat trout were observed through out the reach.

BRUSH CREEK

Reach 1

Overall, this stream is a channel type 'A' although it becomes a type 'B' at times. Dominant and subdominant substrates are cobble and gravel. Fines appear to be a problem since cobble embeddedness tended to rate as high, especially compared to the other streams surveyed by the same crew. Stream enhancement structures were installed for the first 0.2 miles. The existing pools per mile and pieces of LWD per mile are low through out most of the reach. Existing pool habitat tends to be of good quality and they are particularly deep considering the stream size. Road 1802.160 is just above the stream channel, causing some mass wasting. At river mile 0.5 a large slide dammed the channel creating a pond and a possible migration barrier. Fine sediment and algae is present in relatively large amounts and the channel is shallow and braided, at times disappearing beneath the surface. Riparian seral conditions are large trees. At the beginning of the reach, a campground appears to be causing some erosion. In the past ODFW has supplied winter steelhead fry which the USFS raised in hatch boxes on Brush Creek. This has not occurred since 1992. Primarily cutthroat trout were found in Brush Creek along with banded sculpin, crayfish and Pacific giant salamanders. Many fry were concentrated at the beginning of the reach. This could be an important spawning area for resident trout within Winberry or North Fork Winberry Creeks.

Reach 2:

The stream continues to be classified as a type 'A' channel with a cobble/gravel substrate. Fines tended to embed the cobbles. More large woody debris is present in reach 2. Many pieces were too small to count but still provided good habitat. A couple of LWD jams are creating an 8 foot and a 4 foot falls. Pools per mile are still low, although those present were of quality habitat similar to reach 1. Riparian seral condition was good with 80% as large trees. However, a clearcut with no buffer is located adjacent to the right bank (looking downstream) at the top of the reach. This clearcut unit has created a significant amount of erosion. Mass wasting and bank cutting is evident adjacent to the channel in this area. Blowdown, which has caused slides, has also been found adjacent to the stream. Riffle braids are common in this area. Stability concerns are high in upper Brush Creek. Most of the trout observed were less than six inches. Fry were seen in great numbers around NSO 113-114 (see stream inventory folder); this may be a spawning area. The reach ended at a large log jam, which also ended fish use.

Reach 3:

Since fish use ended in reach 2, this reach was formally surveyed only for the first 580 feet. The rest was walked through so data tends to be more generalized. The channel type is an 'Aa+ 3' (cobble). Deposition and braided channels were common. Pools were more common and quality was good. Wood was all very small, not meeting the regional protocol criteria to be counted. Riparian condition was poor due to clearcuts on

both sides of the stream. Stability was still a concern with mass wasting and bank cutting commonly observed.

BLANKET CREEK

Reach 1:

The channel type is a 'B' with cobble and small boulder as the dominant and subdominant substrate. Stream enhancement structures were installed for the first 3/4 of the reach. They are of good quality adding complexity to the system. The logs used tend to be small diameter, collecting gravels and cobbles on previously scoured bedrock. Pools per mile are high. Large woody material is low in pieces per mile, however much of the wood is smaller than protocol criteria so it is not counted even though it is very effective at providing habitat. Side channel habitat was found throughout the reach. Riparian seral condition in the lower part of the reach was good. The inner hardwood riparian is 45 feet wide and the outer riparian consisted of large and mature trees. Seral conditions changed to smaller trees upstream. Water temperature reached 64°F at 1535 hours in September. Some bank cutting is evident, but does not appear to present a problem. Clay was observed in some of the banks. Rainbow and cutthroat trout were found in reach 1; cutthroat were most common. Lengths range from fry up to 8 inches. Most of the fish were found in pools created by the log and boulder structures.

Reach 2:

Channel type is an 'A' with bedrock and cobble as the dominant and subdominant substrate. Pools per mile are high even though long bedrock riffles were common. Pieces of large woody debris per mile areas low, although much of the wood was not within the bankfull criteria needed to count as a piece of LWD. This was especially noted in two log jams, one of which was very large but only a few pieces could actually be counted. Many side channels were found within the reach. Two waterfalls are migration barriers; one is 13 feet and the other is 70 feet and marks the end of fish use. Cutthroat were the only species seen and very few were observed. Most were 0-3 inches; only one was between 3-6 inches.

TRAVERSE CREEK

Reach 1:

This stream is a type 'B' channel with cobble and gravel as the dominant and subdominant substrate where measurements to determine channel type were taken. However, small boulders tended to dominate throughout the reach. Pool habitat was very good, with plenty of deep pools. Pocket pools within riffles were also common. Large woody debris was common and helped create much of this good pool habitat. Side channel habitat was also available. The riparian area is predominately large trees; however, a clearcut runs along the right bank for part of the reach. A narrow buffer was

left adjacent to the stream channel. Temperature was highest at 64°F at 1520 hours on 6/18/95. Cutthroat and rainbow trout were the only fish species observed. Several adults (6-8 inches) were found in some of the high quality pools. These are particularly large fish for this size stream when compared to other area streams surveyed.

Reach 2:

Channel type 'B' continues as the channel gradient decreases. Pool habitat is common and of good quality. Small boulders and cobble are the dominant and subdominant channel substrates. Bank cutting and mass wasting are common with clay soils in the upper banks. Fortunately the large amount of large woody debris is maintaining channel stability in this earthflow-prone terrain. There is one huge log jam within the reach. Heavy deposits of fines are being trapped by the log jams. Riparian condition is fair to poor; much of the riparian area is in a small tree seral stage. Very few cutthroat or rainbow trout were observed. Pacific giant salamanders and crayfish were present. The culvert on the 1802.158 road is a barrier.

Reach 3:

This reach is a 'B' channel with a cobble and gravel substrate. There is a high amount of large wood present. Pools are frequent and there is some side channel habitat. Riparian condition is poor with a clearcut on both sides of the channel for the upper half of the reach. Little to no buffer exists, limiting future recruitment of large woody debris. A 15 foot fall and possibly two culverts are migration barriers. However, cutthroat trout are found half a mile upstream from the second culvert.

SOUTH FORK WINBERRY CREEK

This stream was surveyed in 1992 when survey protocol was somewhat different than the surveys discussed above. Large woody debris was counted more often, riparian did not have a hardwood inner zone and other parameters, such as bank instability were not collected. Reaches were also identified much more frequently. For example, this survey covers 17 reaches. For purposes of distilling information the following report will combine several reaches.

Reach 1 to 2

These reaches are within a type 'B' channel. Substrate tends to be cobble and small boulder. Pools per mile are moderate and LWD per mile is high. This is primarily due to restoration enhancement projects of log and boulder structures. Riparian seral condition consists of large trees although hardwoods are dominant in part of reach 2. Cutthroat and rainbow trout were observed. Many fry were seen near the mouth of South Fork Winberry Creek, possibly indicating a popular spawning area. Temperature in Reach 1 was 61°F at 1430 hours on 7/22/92.

Reach 3 through 5:

This channel is predominantly a 'B' channel type, with a small confined area in Reach 5 grading to 'A'. The type 'A' channel begins at a 15 foot waterfall and continues upstream for less than half a mile. Habitat enhancement projects were completed throughout this area, with several log and boulder structures placed after the survey was conducted. Survey shows high quality pool habitat in reaches 3 and 5, with poor quality pool habitat in Reach 4. However, instream structures were installed after the survey was conducted so pool quality may be improved. Bedrock was common, particularly along the banks. Many fish were observed; some were 9-10 inches long. Temperature of 65°F was recorded on 7/28/92 at 1238.

Reaches 6 to 8

Reaches 6 and 7 are type 'B' channels and the stream becomes more entrenched in Reach 8 to an 'A' channel. Beaver dams and side channels are common in the moderately entrenched reaches. The channel has been scoured to bedrock in several places. Installed log and boulder structures have helped trap some debris and form plunge pools but quality pools are limited. Sinuosity is high in Reaches 6 and 7, and a larger floodplain is found in Reach 6. Riparian condition is hardwood dominant with two harvest units adjacent to Reach 6. One has a 100 foot buffer but is fairly open and the channel is not well shaded. Temperature recorded on 7/28/92 at 1610 was 66°F. Many trout up to 9 inches were observed in the lower gradient, moderately entrenched reaches.

Reaches 9 to 11

These are 'A' channel types. Wood is mostly accumulated in large log jams. Reach 10 has 2 very large jams which divert water into the bank and cause erosion and subsurface flows. This creates a low flow migration barrier. There is also a beaver pond at the end of Reach 10 containing copious amounts of algae. Clearcuts are commonly found adjacent to the channel. Water temperature was 65°F on 8/10/92 at 1330. Reach 11 ends at an 8 foot waterfall.

Reaches 12 to 17

These are 'A' channel types. Habitat tended to stairstep with log jams in the nick points. Reach 13 had many log jams. Beavers were found in Reach 14. Many fish up to 8 inches were seen in reach 13 but fish use ended in Reach 15 Clearcuts are adjacent to the channel in reaches 12, 13, 14, and 17 and second growth is adjacent to reaches 15 and 16. Reach 16 has stability problems and Reach 17 is marshy with sedges and cattails. No beaver activity was observed on this wet area.

CABIN CREEK

This stream was surveyed in 1990 using the Gifford Pinchot National Forest Stream Methodology. Much of the channel is scoured to bedrock since it failed after the 1964 storm event. Pool habitat is limited; however, large woody debris appears to be plentiful. Protocol for collecting pieces of large wood is different for this methodology, so numbers cannot be compared to other surveys. Riparian condition is fair. Most of the area consists of mature trees but small trees and clearcuts can also be found.

APPENDIX F: RECREATION

Fall Creek Reservoir Use

Unit Day Value (UDV) is a method for determining the economic benefits of recreational activities developed by the COE. Five categories of evaluation criteria are considered in determining the UDV, and each can be affected by changes in reservoir operation. The evaluation analysis for Fall Creek Reservoir is shown in Table F-9. This reservoir scored on the higher end of the scale for the twelve analyzed. If it were not for the operational drawdown and, to a lesser extent, additional developed facilities, Fall Creek Lake would have ranked the highest. The total average annual recreation value for Fall Creek Reservoir during 1985-89 was $966,849.00/ year. Forecast value for the years 2000 and 2010 are $1,581,362.00 and $2,669,510.00 respectively. Consequently, though the Corps receives only a fraction of these values in return, the economic benefit is substantial. These calculations were done in conjunction with the 1991 Willamette Basin Review.

Recreation Carrying Capacity

The capacity of a recreation resource to provide opportunities over the long term, without significant degradation of the resource is called the *carrying capacity (see Figure F-1).* Two components of carrying capacity are the social and resource capacity. *Social capacity* defines the amount of use an area can receive while still providing a quality recreational experience. *Resource capacity* refers to the level of use beyond which environmental deterioration is irreversible or resource degradation renders it unsuitable and unattractive. When the social capacity is exceeded the result is overcrowding. Exceeding the resource capacity constitutes overuse. Establishment of recreation carrying capacities is critical in recreation management and planning. Visitation projections are a reflection of estimated recreation demand and assume that continued development will occur commensurate with demand. However, there are many constraints to the watershed's capacity to sustain continued development, including resource capacity, financial and policy considerations, and management objectives not compatible with recreation use. The COE has completed determinations of carrying capacities for Fall Creek Reservoir in conjunction with the Master Planning process (1994).

Limiting the watershed's sustained visitor use is the *maximum practical use level.* This is dependent on the nature and extent of recreational opportunities available at present and in the future *(see Table F-10).* As the maximum practical use level is exceeded, the watershed's resources and visitors' enjoyment will deteriorate. Demand at Fall Creek Reservoir has regularly exceeded carrying capacity in recent years, particularly in 1989, 1990, 1991, and 1993. Recent improvements at many of the recreation sites have allowed a higher density use, without resource deterioration. Consequently the maximum practical use may need revision. If all proposed facilities are constructed at Fall Creek Reservoir, estimates indicate demand will exceed ultimate carrying capacity by the year 2010. However, it is unlikely that any of the proposed facilities will be

constructed, until changes in reservoir operation and fiscal and policy constraint occurs. Consequently, Fall Creek Reservoir will not meet the estimated future demand for water-related recreation in the area. Inadequate recreational use data exists for the remainder of the watershed, and is necessary to effectively manage for future needs.

Identified regional resource needs have been translated into project wide resource objectives for Fall Creek Reservoir and analyzed for suitability *(see Table F-11).* The Resource Use Objectives (RUO), presented in the Corps of Engineers Master Plans, are intended to promote sound stewardship of natural resources and ensure future opportunities for their public use, while emphasizing each reservoir's unique and particular qualities.

Updated and reliable visitation data is needed for the watershed as a whole, so realistic carrying capacities may be determined, and plan to provide future recreational opportunities. Collaboration in this endeavor could benefit the public as well as the federal agencies involved.

Table F- 1. Visitation to Willamette National Forest

	Visitor Days		
Year	Developed Sites	Dispersed Areas	Total
1982	1,424,000	1,463,400	1,887,400
1981	1,414,000	1,473,700	1,887,700
1980	1,393,400	1,399,500	2,792,900
1979	1,374,700	1,342,800	2,717,500
1978*	1,176,600	1,150,500	2,327,100
1977	1,108,900	1,153,100	2,262,000
1976	920,300	1,153,100	1,949,900
1975	1,038,100	1,030,400	1,068,500
1974	1,121,700	1,300,400	2,422,100
1973	948,500	1,073,400	2,021,900
1972	964,800	904,700	1,869,500
1971	936,200	903,600	1,839,800
1970	1,026,100	1,140,100	2,166,200
1969	946,500	1,033,700	1,980,200
1968	1,000,000	819,700	1,819,700
1967	984,700	736,700	1,721,400
1966	956,900	693,300	1,650,200

* Starting in 1978, data is for the fiscal year. Prior to 1977, data was compiled on a calendar year basis.

Source: U.S. Forest Service, Recreation Information Management System.

Table F- 2. Population by Decade and Average Annual Population Change

Population by Decade

Decade	1950	1960	1970	1980	1989
Oregon	1,521,341	1,768,687	2,091,533	2,633,149	2,791,000
Will. Basin	992,387	1,168,899	1,446,594	1,793,860	1,915,000
WRB % of State	65.2%	66.1%	69.2%	68.1%	68.6%

Counties

Benton	31,570	39,165	53,776	68,700	71,000
Clackamas	86,716	113,038	166,088	243,000	265,500
Lane	125,776	162,890	213,358	275,200	281,000
Linn	54,317	58,867	71,914	89,750	90,000
Marion	101,401	120,888	151,309	204,692	224,000
Multnomah	471,537	522,813	554,668	562,640	581,000
Polk	26,317	26,523	35,349	45,560	47,800
Washington	61,269	92,237	157,920	247,800	295,000
Yamhill	33,484	32,478	40,213	55,600	60,700

Source: *Population Estimates for Oregon,* 1980-89. Center for Population and Research, Portland State University, 1990.

The following table illustrates the annual rate of population change over comparative time periods for the state, basin and individual counties within the basin.

Average Annual Population Change

Area	1950-1989	1980-1989
Oregon	1.57%	.65%
Willamette Basin	1.7%	.73%
Benton	2.1%	.37%
Clackamas	2.91%	.99%
Lane	2.07%	.19%
Linn	1.3%	.03%
Marion	2.05%	.94%
Multnomah	.54%	.36%
Polk	1.54%	.53%
Washington	4.11%	1.96%
Yamhill	1.54%	.98%

Source: US Census of Population, US Dept. of Commerce, Bureau of Census 1950, 1960, 1970, 1980. 1989 figures for Oregon from Portland State University, Center for Population Research and Census.

Table F-3. Fall Creek Lake Existing Public Use Facilities

Table F-3
Fall Creek Lake
Existing Public Use Facilities

Site	Acres	Agency	Fees	Type Of Area	Facilities						
					Picnic Tables	Camping Spaces	Boat Ramp Lanes	Boat Docks	Parking Cars	Parking Trailers	Swimming Beach
Winberry Cr. Park	62.1/land 19.4/water	Lane County	No	Day use	57	0	2	1	108	120	Yes
North Shore Access	13.6/land 2.8/water	Lane County	No	Day use; minimal development	4	0	2	0	0	30	No
Sky Camp	103/land 30/water	Lane Co SD #52	Yes	Day use/overnight (education camp)	10	*6	1	0	75	20	Yes
Cascara Campground	80	Corps	Yes	Overnight use	10	45	1	1			Yes
Fishermans' Pt. Prim. Campgrd.	5	Corps	No	Overnight use: minimal development	10	10	1	0	30	10	No
Fall Cr Arm Day Use	4**	Corps	No	Day use; minimal development	13	0	2	0	23	12	No
Tufti W.L. Area	280	Corps	No	Day use/Wildlife	0	0	0	0	10	0	No
Total Visitor					104	61	9	3	246	192	

* 6 Cabins with 30+- spaces plus lodge
** 40 Acres represent developed area only

Table F- 4. Analysis of Project Historic Visitation

Project: Fall Creek Lake

Activity	1985	1986	1987	1988	1989	Average
Camping	32,536	35,026	39,381	49,516	69,003	45,092
Picnicking	28,850	28,725	42,156	49,621	56,374	41,145
Boating	55,094	45,173	65,368	88,483	87,333	68,290
Fishing	24,419	30,992	46,527	60,568	62,261	44,953
Hunting	4,290	3,710	3,114	3,343	3,373	3,566
Sightseeing	9,667	12,825	22,801	32,914	37,757	23,193
Waterskiing	51,185	51,179	36,248	44,592	46,018	45,844
Swimming	41,063	38,705	62,905	71,348	83,017	59,408
Other	88,039	91,509	83,152	81,649	97,797	88,429
Total Activity Occasions	335,143	337,844	401,652	482,034	542,933	419,921
Total Visitors	195,162	219,050	223,068	265,835	311,519	242,927
Ratio of Duplication (%)	1.72	1.54	1.80	1.81	1.74	1.72

Average % of Hunting and Fishing: 0.20

Average % of General Recreation: 0.80

Table F-5
Visitor Attendance at Fall Creek Lake, 1985

MONTH	Camping	Picnicking	Boating	Fishing	Hunting	Sight Seeing	Water Skiing	Swimming	Other	TOTAL
Jan	103	372	450	1,404	959	718	0	0	4,612	6,589
Feb	65	202	393	1,367	0	552	0	0	6,579	8,176
Mar	306	0	546	1,368	0	392	0	0	5,536	7,376
Apr	1,374	683	2,208	2,801	0	805	0	0	10,247	14,923
May	3,364	2,646	7,297	3,380	0	689	609	1,245	5,261	17,225
Jun	5,822	5,740	12,685	3,217	0	1,147	14,345	9,095	7,306	30,165
Jul	9,479	12,395	16,582	3,955	0	1,652	20,116	19,460	18,805	44,295
Aug	9,277	5,128	11,910	3,026	0	1,465	13,660	8,820	8,381	31,410
Sep	1,248	1,091	1,678	925	0	389	2,318	2,306	2,280	7,136
Oct	1,222	226	452	616	827	516	137	137	5,317	7,607
Nov	0	256	304	650	1,399	629	0	0	9,000	11,816
Dec	276	111	589	1,710	1,105	713	0	0	4,715	8,444
TOTAL	32,536	28,850	55,094	24,419	4,290	9,667	51,185	41,063	88,039	195,162
% of Total	16.7%	14.8%	28.2%	12.5%	2.2%	4.9%	26.2%	21.0%	45.1%	

Source: U.S. Army Corps of Engineers, Portland District.

Table F-5. Visitor Attendance at Fall Creek Lake, 1985

Table F- 6. Projected Fall Creek Lake Visitation

Year	Trend Extrapolation Method	Visitation Analysis Method
1992	326,000	342,000
1995	353,000	380,013
2000	360,000	411,164
2005	380,000	440,849
2010	403,000	471,937
2015	420,000	505,361
2020	438,000	541,026
2025	456,000	579,374

Table F- 7. Forecast Future Visitation at Fall Creek Lake

Project: Fall Creek Lake

Activity	Average Annual Activity Occ. (1985-1989)	Forecast Regional Growth Rates (%) 2000	2010	Estimated Future Use in Act. Occ. 2000	2010
Camping	45,092	70	191	76,657	131,219
Picknicking	41,145	40	109	57,603	85,993
Boating	68,290	49	140	101,752	163,896
Fishing	44,953	50	123	67,430	100,246
Hunting	3,566	2	4	3,637	3,709
Sightseeing	23,193	59	165	36,877	61,461
Waterskiing	45,844	55	139	71,059	109,568
Swimming	59,408	63	160	96,834	154,460
Other	88,429	94	288	171,553	343,105
Total Activity Occ. Averages	419,921	54	147	683,403	1,153,658
Total Visitors	242,927			397,327	670,731
Ratio of Duplication (%)	1.72				

Table F- 8. Projected Land County Recreation Demands and Needs

Projected Outdoor Recreation Demand, Lane County 1975-90

Activity	1975	1980	1985	1990
Camping	1,834,771	2,014,367	2,171,894	2,280,717
Picnicking	2,186,777	2,400,829	2,488,578	2,718,279
Non-Pool Swimming	894,481	982,037	1,058,834	1,111,887
Sightseeing	3,746,694	4,113,438	4,435,116	4,657,338
Fishing	1,685,289	1,850,253	1,994,946	2,094,908
Power Boating	773,931	849,687	916,134	962,037
Float Boating	253,155	277,935	299,670	314,685
Waterskiing	279,676	307,052	331,064	347,652
Pleasure Walking	10,442,041	11,464,157	12,360,740	12,980,007
Hiking	1,673,234	1,837,018	1,980,676	2,079,918
Hunting	691,957	759,689	819,098	860,139
Outdoor Games	3,828,846	4,198,142	4,526,444	4,255,242
Bicycling	12,693,915	13,936,455	15,026,310	15,779,205
Off-Road Vehicling	935,468	1,027,036	1,107,352	1,162,836
Other	453,268	497,636	536,552	563,436

Source: Oregon Outdoor Recreation Demand Bulletin, Technical Document I of the Statewide Comprehensive Outdoor Recreation Plan. 1975.

Lane County Recreation Needs

Facility	Unit	Supply	Gross Need	1982	Net Need 1990	20000
Campsites	Site	3,917	1,696	(2,221)	(2,037)	(1,694)
Picnic Tables	Table	3,559	1,638	(1,921)	(1,679)	(1,525)
Boat Launch Lanes	Lane	183	80	(103)	(91)	(84)
Walking & Hiking Trails	Mile	56	507	451	520	560
Biking Trails	Mile	38	19	(19)	(16)	(15)
Bridle Trails	Mile	0	95	95	109	188
Ball Fields	Field	39	226	187	228	257
Neighborhood Parks	Acres	248	1,355	1,107	1,352	1,527
Community Parks	Acres	1,205	2,710	1,505	1,995	2,345
District Parks	Acres	8,293	4,065	(4,228)	(3,493)	()

() indicates surplus

Source: Oregon Outdoor Recreation, Statewide Comprehensive Outdoor Recreation Plan, 1983.

Table F- 9. Analysis of Estimated Unit Day Values for Water-Related Recreation

Project: Fall Creek Lake

	Judgment Factors		
Evaluation Criteria	Baseline Condition	Scenario I	Scenario II
Recreation Experience (Max. Point Value: 30)	Many activities; moderate to high quality 20	No significant change over B.C. 20	No significant change over B.C. 20
Availability of Opportunity (Max. Point Value: 18)	Several lakes within 1 hour; 2 within 30 minutes 4	No significant change over B.C. 4	No significant change over B.C. 4
Carrying Capacity (Max. Point Value: 14)	Adequate facilities; some expansion possible to optimize site potential 7	No significant change over B.C. 7	No significant change over B.C. 7
Accessibility (Max. Point Value: 18)	Fair access; fair roads at site; moderate impacts at drawdown 8	No significant change over B.C. 8	No significant change over B.C. 8
Environmental Conditions (Max. Point Value: 20)	Above average aesthetic quality 10	No significant change over B.C. 10	No significant change over B.C. 10
Total Assigned Points	49	49	49

Figure F-1. Estimated Annual Visitation (Demand) and Maximum Practical Use Levels for Fall Creek Lake

Figure F-1
Estimated Annual Visitation (Demand) and Maximum Practical Use Levels for Fall Creek lake

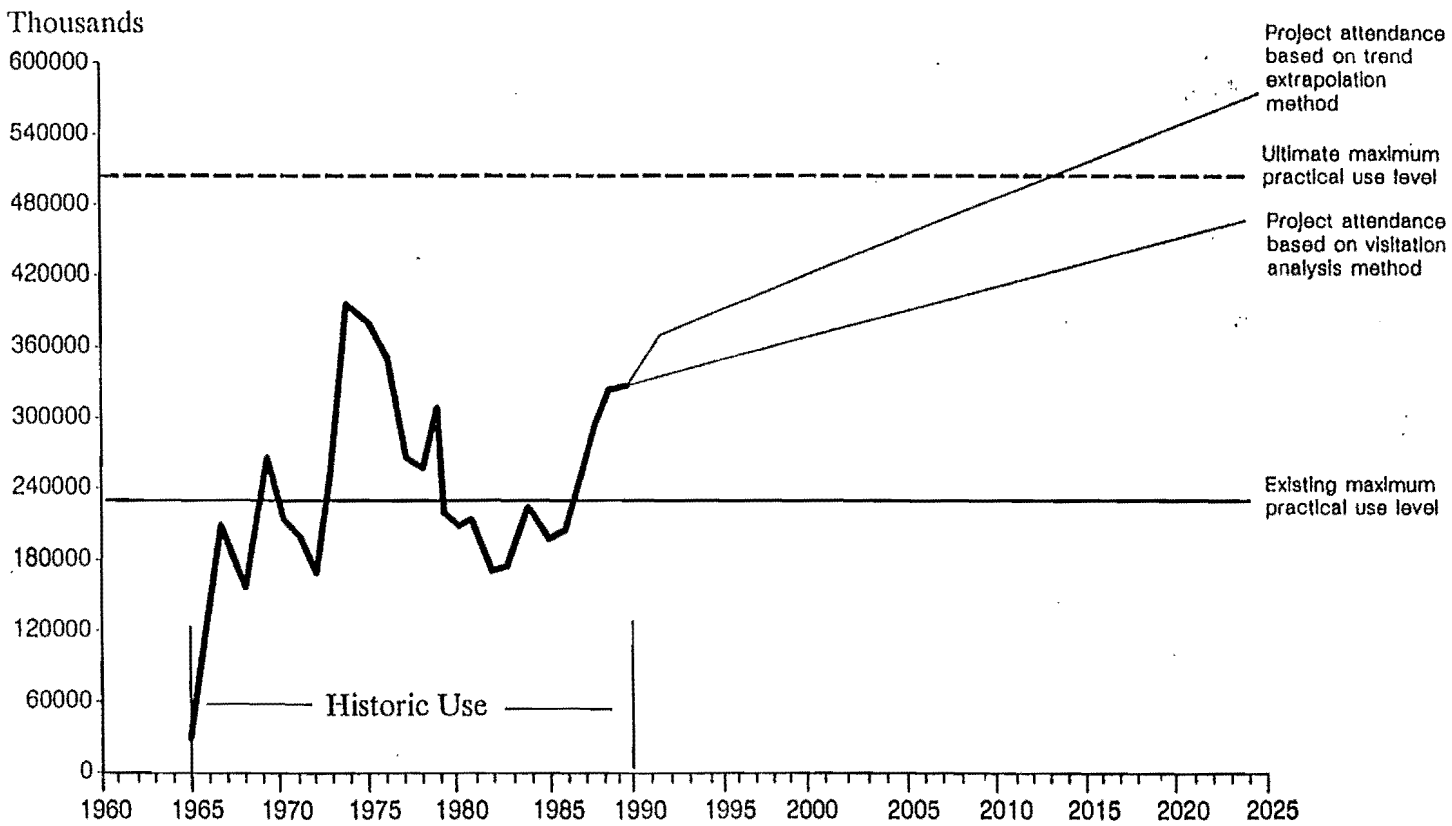


Table F-10. Estimated Maximum Practical Use of Fall Creek Lake

Table F-10
Estimated Maximum Practical Use
Fall Creek Lake

Activity	Unit	Density or Space Standard (Social Carrying Capacity)	Turnover Rate	Facilities or Resources		Activity Occasions/Day	
				Existing	Future	Existing	Future
Boating	Surface Acres						
Waterskiing		7.5 acres/boat (3 persons)	3	1200	1200	1400	1400
Motorized		8.8 acres/boat (4 persons)	3	350	350	480	480
Other motorized		11.5 acres/boat (2 persons)	3	72	72	38	38
Boat fishing		9.0 acres/boat (2 persons)	2	1600	1600	711	711
Picnicking	Tables	6 persons/site	3	97	200	1746	3600
Camping	Sites	5 persons/site	1	50	150	250	750
Swimming	Surface Acres	113 swimmers/acre	3	3	4	1017	1356
Shoreline Fishing	Linear Feet	60 feet/angler	2	12,000	12,000	600	600
Open Play	Acres	50 persons/acre	3	10	15	1500	2250
Sightseeing	Parking Spaces	4 persons/space	3	50	100	600	1200
Walking/Bicycling	Trial Miles	10 persons/mile	2	5	10	100	200
Hunting	Acres	30 acres/hunter	3	60	60	6	6
						8,488	13,631

Table F- 11. Relative Suitability of Fall Creek Lake

Relative Suitability of Fall Creek Lake Meeting Project-wide Objectives

Regional Needs*	Project-wide Objectives*	Fall Creek
WILLAMETTE BASIN PROJECT – Develop a comprehensive water control plan [Flood Control Act OF 1938 (PL-761) and Flood Control Act of 1950 (PL-516)]	To develop and maintain Project to meet authorized purposes.	●
CAMPING – An estimated 754,000 annual camping occasions occur within the study area. Project camping use accounts for approximately 17 percent of this demand.	To maintain lands and facilities to help support identified existing and future regional camping needs.	●
DAY USE RECREATION – An estimated demand of 7,443,320 day use activity occasions occurs within the study area. Project lands and facilities help support approximately 25 percent of this demand.	To maintain lands and facilities to help support identified regional day use recreation needs which presently occur or could be accommodated on Project lands in the future.	●
LAND USE/OPEN SPACE – LCDC Goals and Guidelines 3, 4, 5, 6 and 15 seek to preserve agricultural, and forest lands, and maintain rural setting and open space values.	To maintain Project lands in support of State and Counties requirements to preserve both visual and open space values.	●
WATER QUALITY – Oregon Administrative Rules Chapter 340 and LCDC Goals and Guidelines Number 6 define requirements to preserve and maintain the State's water resources.	To maintain and preserve high quality water resources for public, wildlife, and fisheries benefits.	●
UNIQUE AND ENDANGERED FLORA – The Endangered Species Act of 1873 and the Oregon Revised Statute 564.020 seek to protect threatened, endangered and rare vascular plants. Currently thirty such species are located with the study area.	To maintain and manage Project lands to support Federal and/or State efforts to protect and increase populations of threatened, endangered or rare vascular plants.	○
UNIQUE THREATENED AND ENDANGERED ANIMAL SPECIES – The Endangered Species Act of 1973 seeks to protect threatened, endangered and unique wildlife species. Currently 19 such species are located within the study area.	To maintain and preserve habitat for the benefit of unique and endangered wildlife species, and to support of Federal and/or State efforts on adjacent lands which seek to benefit these species.	●
WATERFOWL – The USFWS and ODFW have developed regional waterfowl management objectives including a 3-year wintering average of 75,000 Canada geese, 5,000 Tundra swans, a 250,000 average for puddle ducks (Willamette Basin) to maintain traditional production, migration, and wintering habitats, to uniformly distribute waterfowl and to provide for public use of waterfowl.	To maintain and manage wildlife habitat on Project lands to support regional management guidelines for waterfowl management.	○
BIG GAME – The ODFW management objectives for big game include habitat to support 3,500 Roosevelt elk and 37,000 black-tailed deer (McKenzie unit), 1,300 Roosevelt elk and 18,650 black-tailed deer (Indigo unit) and reduction of deer population in the Willamette unit.	To manage and manage Project habitat in support of regional big game management program.	◒
NON-GAME – The ODFW and USFWS management objectives for species in this category include managing and maintaining present production, migration, foraging, roosting and wintering habitat to increase populations of threatened, endangered, sensitive bird and national species groups of special emphasis.	To manage wildlife habitat on Project lands to maintain or increase non-game wildlife populations.	◒
UPLAND GAMEBIRDS – The ODFW management objectives are to maintain and manage the present production, foraging roosting and wintering habitat to increase upland gamebird populations.	To manage upland gamebird habitat to support regional upland gamebird management programs.	◒
FISHERY – ODFW's fishery management objectives include an 45,000 Spring Chinook over the Willamette Falls with a 10,000 adult harvest, maintain a 5,000 minimum early and a 14,000 native late steelhead run, and maintain optimum populations of fish resources for public and commercial benefits.	To maintain and manage fisheries habitat on Project lands to support identified regional needs.	◒
CULTURAL RESOURCES – Protect cultural resources in compliance with Executive Order 11593, National Historic Preservation Act Of 1966 (PL 89-665) and amendments, National Environmental Policy Act of 1969 (PL 91-190), Archaelogical Resources Protection Act of 1979 (PL 96-95, and ORS 97-740-97-750.)	To protect known cultural resource sites and investigate those sites having high probability of containing significant information.	◒
INTERPRETIVE FACILITIES – Develop a coordinated regional program to meet public needs within the study area for information and access to public lands.	To develop an interpretive program that will provide public understanding of the Corps role in developing the basins water resources.	◒

* A more detailed explanation of these needs and objectives are discussed on page 3-13 (Regional Needs), and page 4-49 (Project-Wide Objectives) of the UWVP MPRU, Volume 1.

● High Suitability ◒ Moderate Suitability ○ Low Suitability

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Maps

Mylar Overlay

Map 1. Vicinity Map

Map 2. Major Features

Map 3. Shaded Relief

Map 4. Ownership

Map 5. Land Use Allocations

Map 6. Geology

Map 7. Soil Categories and Erosion Potentials

Map 8. Reservoir Erosion Sites

Map 9. Highest Risk Areas of Mass Wasting and Potential Sources of Coarse Grain Sediments

Map 10. Highest Risk Areas of Landflows and Potential Sources of Fine Grain Sediments.

Map 11. Snow Zone

Map 12. Aspect Class

Map 13. Precipitation

Map 14. Stand Initiation Seral Stage In Transient Snow Zone

Map 15. Water Data Collections Sites

Map 16. Oregon DEQ Listings

Map 17. USFS Road Surface Type

Map 18. USFS Road Maintenance Level

Map 19. Reference Seral Condition (1900)

Map 20. Current Seral Condition

Map 21. Reference Riparian Seral Condition (1900)

Map 22. Riparian Seral Condition

Map 23. Interior Habitat

Map 24. Special Status/Sensitive Plant Locations

Map 25. USFS Special Habitat Features

Map 26. Big Game Emphasis Areas & Winter/Summer Range

Map 27. USFS Closed and Decommissioned Roads

Map 28. Late Successional Forest Conditions in Withdrawn Allocations (Current)

Map 29. Late Successional Forest Conditions in Withdrawn Allocations (2016)

Map 30. Late Successional Forest Conditions in Withdrawn Allocations (2036)

Map 31. Late Successional Forest Conditions in Withdrawn Allocations (2056)

Map 32. Late Successional Forest Conditions in Withdrawn Allocations (2076)

Map 33. 11-40 Habitat by Drainage

Map 34. 11-40 Habitat by Quarter Township

Map 35. Suitable *Strix occidentalis* Habitat

Map 36. Red Tree vole Habitat

Map 37. Dispersal Corridors

Map 38. Fishbearing Streams

Map 39. USFS Fish Distribution

Map 40. Rosgen Stream Classification

Map 41. USFS Completed Habitat Enhancement Project Areas

Map 42. USFS Surveyed Streams with Reach Breaks

Map 43. USFS Large Woody Debris Density

Map 44. USFS Resident Trout Habitat

Map 45. Recreation Facilities/Harvested Units

Map 46. Harvest Age Timber in General Forest