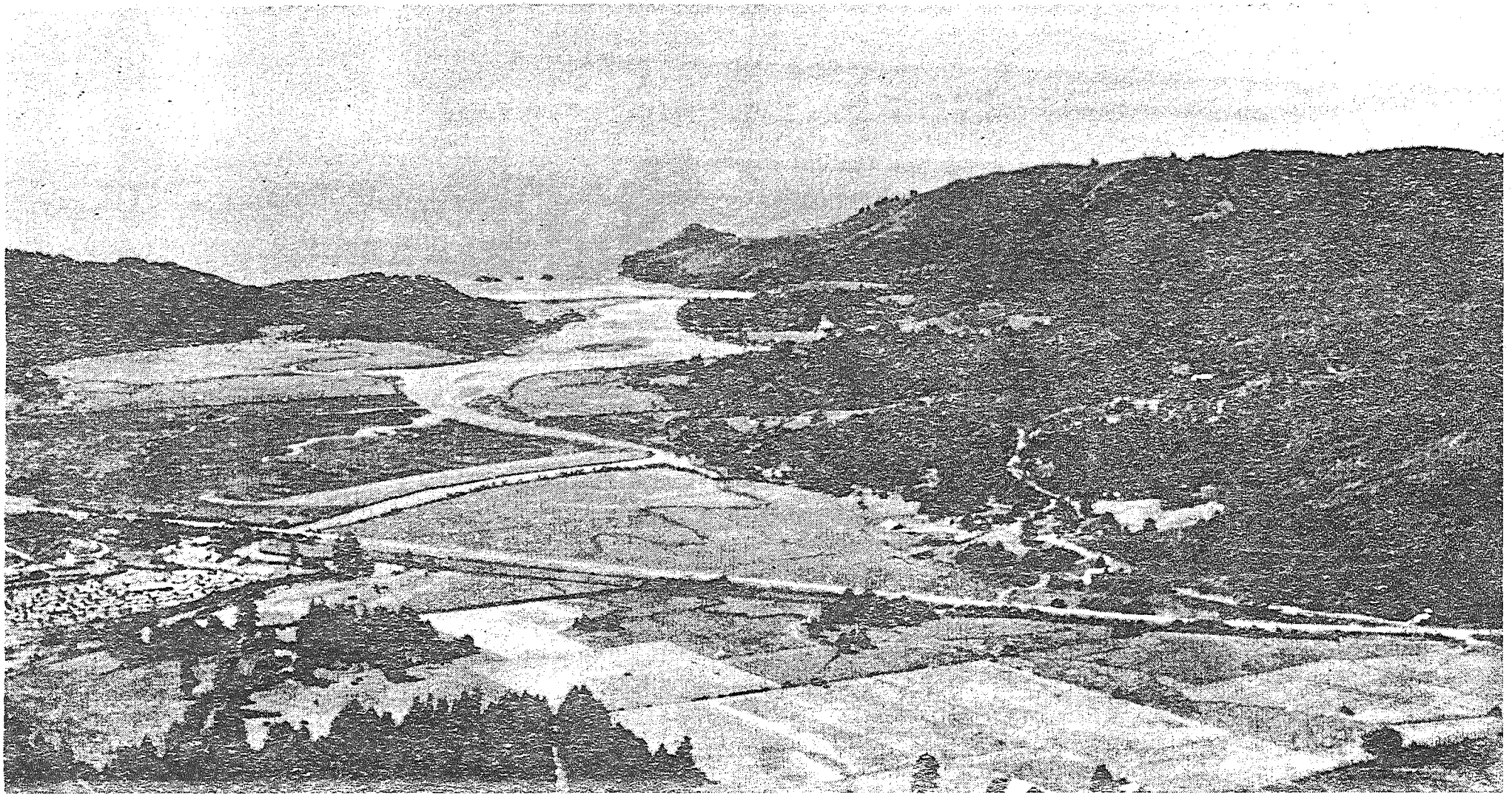
CASCADE HEAD

SCENIC RESEARCH AREA

INVENTORY SUMMARY
LAND SUITABILITY ANALYSIS



CASCADE HEAD

SCENIC-RESEARCH AREA

INVENTORY SUMMARY

LAND SUITABILITY ANALYSIS

SIUSLAW NATIONAL FOREST
PACIFIC NORTHWEST REGION
1975

INVENTORY FOR THE CASCADE HEAD
SCENIC-RESEARCH AREA

INTRODUCTION This volume contains a summary of the inventory data collected on the Cascade Head Scenic Research Area. This volume has three main sections: (1) Basic Resources; (2) Human Uses and Activities; and (3) Response Units. For specific and more detailed information on any portion of this summary, it will be necessary to review the complete inventory file located in the office of the Cascade Head Planning Team at Hebo, Oregon. This summary is designed to give the reader an overview of the resources and values to be found within the Scenic-Research Area and the effect various uses and activities may have on those resources and values.

There have been numerous studies, reports and publications written, and basic data collected on the Area. Much of the information contained in this inventory effort is a direct result of work done by local, state and federal agencies, universities, colleges and individuals knowledgeable on all or part of the Area and its resources. Individual Planning Team members worked with these sources to complete their portions of this inventory.

Planning Team members and their respective disciplines were:

Norm Adams	Timber
George Bush	Soils, Geology
Fred Dawson	Civil Engineering
Phil DeLucchi	Visual
Ken Eversole	Vegetation
Floyd Forristall	Socio/Economic
Richard Hollamon	Transportation Facilities
Beth Horn	Visitor Information, Environmental Education
Willis Horner	Fire Management, Law Enforcement
Jim Lyne	Recreation, Land Uses, Land Ownership
Jim Maxwell	Hydrology, Climate, Estuarian Conditions
Bob Ruth	Research, Scientific
Gene Silovsky	Wildlife, Vegetation
Leslie Wildesen	Cultural (Historic/Archeological)
Pam Wilson	Visitor Information, Environmental Education

All of these disciplines, except for Civil Engineering, have specific sections in this volume. The Civil Engineering data is incorporated into the write-ups on other sections where applicable.

Section 3 of this Summary deals with Response Units. Response units are homogeneous areas of land that, because of their physical similarity, are readily identifiable on the ground. Because of this physical similarity, they will react or respond similarly to treatment, management or use. Section 3 also contains the land suitability analysis for a variety of uses and activities that could impact a particular response unit.

THE LAW The Cascade Head Scenic-Research Area was established when President Ford signed Public Law 93-535 on December 22, 1974. This is the first Scenic-Research Area designated in the United States.1/

The purpose of the Cascade Head Scenic-Research Area, as stated in the Act, is:

"...to provide present and future generations with the use and enjoyment of certain ocean headlands, rivers, streams, estuaries, and forested areas; to insure the protection and encourage the study of significant areas for research and scientific purposes; and to promote a more sensitive relationship between man and his adjacent environment..."

The law directs the Secretary of Agriculture to develop a comprehensive management plan for the Area. It states that this planning effort will provide for appropriate public participation in the planning process. The plan will prescribe specific management objectives and management controls necessary for the protection, management and development of the Area. This inventory is the first step in that planning process.

1/ Appendix VII contains a copy of P.L. 93-535

THE AREA The Cascade Head Scenic-Research Area is located in Lincoln and Tillamook Counties, in the state of Oregon. It lies along the Oregon coast south of Neskowin and north of Roads End. The Area contains about 9,670 acres, of which approximately 5,045 acres are in private ownership. It is within the boundary of the Siuslaw National Forest. (See Appendix I for map of Area).

The topography of the Area ranges from tidal marsh to the typical rugged features of the Coast range. Elevations vary from sea level at the mouth of the Salmon River to approximately 1,770 feet at Cascade Head.

The Salmon River estuary is an integral part of the Scenic-Research Area. This estuary remains relatively undisturbed from the impacts of man. Its recreational, research, educational, scenic, and estuarine resources have national significance.

In addition to Congressional designation as a Scenic-Research Area, all or portions of the Area have various other formal designations.

1. The Neskowin Crest Research Natural Area was established on 10/26/41 as an example of Sitka spruce-western hemlock forest growing adjacent to the ocean. The 686 acre tract is located in the northwest corner of the Scenic-Research Area in Sections 1 and 2, T6S, R11W, W.M. (See Appendix I for map of Area).

The Research Natural Area was established to provide the following research and educational opportunities:

a. Baseline areas against which effects of human activities can be measured;

b. Sites for study of natural processes in undisturbed ecosystems; and

c. Gene pool preserves for all types of organisms, especially rare and endangered types.

The guiding principal in management of a Research Natural Area is to prevent unnatural encroachments or activities which directly or indirectly modify ecological processes on the tracts. Franklin (1972) has described the physical environment, the flora and fauna, and the research opportunities available in the Neskowin Crest Research Natural Area.

2. The Cascade Head Scenic Area was established on 6/10/66. This 250 acre tract lies along the coast south and west of the Neskowin Crest Research Natural Area. It is located in Sections 2, 3, 10 and 11, T6S, R11W, W.M. (See Appendix I for map of Area).

The Siuslaw National Forest has prepared a management plan for the Cascade Head Scenic Area. The planned objective for this Scenic Area is to maintain it as nearly as possible in an undisturbed condition. This is the management objective where it is compatible with research objectives. If a conflict arises, research objectives will govern.

3. The Cascade Head Experimental Forest was established in May 1934. It has been the center for silvicultural and related research in the Sitka spruce-western hemlock forest type. The entire Experimental Forest contains 11,890 acres. About 3,930 acres of this total is within the boundaries of the Scenic-Research Area. (See Appendix I for map of Area).

The research conducted on this Experimental Forest has wide application since this forest type is found from northern California to Alaska. To date, there have been over 60 research publications based on work done here that have aided public and private land managers, as well as increasing the scientific data base for this Area.

4. The Cascade Head Scenic-Research Area and the Olympic National Park are part of a recently designated Biosphere Reserve. Establishment of Biosphere Reserves is a United Nations Educational, Scientific and Cultural Organization (UNESCO) sponsored activity, an element of the Man and the Biosphere Program (MAB). Such areas are regarded as essential for studies of ecosystems of various kinds, since they represent baselines or standards against which change can be measured and the performance of other ecosystems judged.

Objectives of Biosphere Reserves are:

a. To conserve for present and future human use the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends.

b. To provide areas for ecological and environmental research including, particularly, baseline studies, both within and adjacent to these reserves. Such research is to be consistent with the objective "a." above.

c. To provide facilities for education and training.

It is intended that biosphere reserves comprise not only completely natural ecosystems, but also semi-natural ecosystems, including those maintained by long-established land-use practices. Preferably, there should be the potential for manipulative research.

To meet these objectives in the United States,

National Parks or Wildernesses are often paired with experimental forests to provide both natural and man-influenced conditions. Thus, the Cascade Head Scenic-Research Area, including the entire Cascade Head Experimental Forest, is paired with the Olympic National Park to form a Biosphere Reserve. Together, they exemplify the coastal coniferous forest, a globally significant forest region.

In the case of interlinked areas, such as the Cascade Head Scenic-Research Area and the Olympic National Park, it is important that they be used conceptually as a unified Biosphere Reserve and not as isolated tracts. Rarely will an isolated tract be able to fulfill all functions -- preservation, research, education. On the other hand, with Olympic National Park being some 160 miles to the north, there is need and justification for reserving local areas from manipulative treatment. One such area, the Neskowin Crest Research Natural Area, has already been designated within the Cascade Head Scenic-Research Area.

SECTION I - BASIC RESOURCES This section is a summary of inventory information pertaining to the physical, biological and cultural resources within the Cascade Head Scenic-Research Area.

A. GEOLOGY Cascade Head is a typical example of a headland and provides a geologic interest area which shows the relentless erosiveness of the ocean. Active undercutting, and the resulting landslides and scarps, can be observed in this Area.

Three major geologic mapping units were identified in the Cascade Head Scenic-Research Area.

1. Marine Sediments - Two separate but similar geologic formations make up this unit. The younger Nestucca formation overlies the Yamhill formation.

a. Yamhill Formation - "The Yamhill Formation consists of several thousand feet of indurated, massive to thin bedded clayey siltstone with minor interbeds of ...sandstone". 2/ The rocks were previously mapped as part of the Nestucca Formation. Marine fossils in the Yamhill Formation indicate this formation is middle to upper Eocene in age. "Weathering of the Yamhill rocks produces a light colored clayey soil that is prone to sliding on moderate to steep slopes". 2/

b. Nestucca Formation - "The Nestucca Formation consists of 800 to 5,000 feet of indurated thin bedded tuffaceous clayey siltstone and subordinate amounts of ash and interbedded arkosic, basaltic, and glauconitic sandstone. Small sandstone dikes and sills are common in the upper part of the section. Marine fossils in the Nestucca Formation indicate this formation is upper Eocene in age... Weathering produces a light colored clay rich soil that is prone to sliding". 2/

2/ Environmental Geology of Lincoln County 1973 page 16

2. Basalt (Volcanic Rocks) - The volcanics are dark gray, prophyritic, alkalic basalt flows, breccias, and water laid pyroclastic rocks with intercalated beds of tuffaceous siltstone. The major rock types include punky to crumbly, dark gray to black, porphyritic basalt flows with tuffaceous claystone. Widespread red baked zones and scoriaceous upper flow surfaces are common in the Study Area. The flow rocks weather slowly. Microfossils in the interbedded sediments of the volcanic rocks at Cascade Head indicate this formation is late Eocene age.

3. Unconsolidated Deposits - These consist of undifferentiated valley alluvium, dune sand, beach sand, bay fill, and landslide debris. These deposits are the results of upland erosion, drowning of the stream mouth by a rise in sea level, and ocean tidal and current depositions.

These three geologic units were used in combination with soils mapping units, and surface and subsurface hydrology units to form the non-biotic portion of response units. 3/

The basalt volcanics for the most part overlie the marine sediments and make up the steep mountainous portion of the headland. The marine sediments underlie the volcanics and dip northwesterly under the Pacific Ocean. They make up the rolling hilly terrain between the mountainous areas and the estuary.

The hilly and mountainous portions of the Area are very susceptible to slumping and landslides. The area of the landslides is underlain by marine sediments. The landslides result from loading and the loss of frictional resistance due to saturation of the weak weathered products of the claystones and mudstones. The landslides may be accelerated or caused by removal of the toe supports during road construction, grading for home or building sites, or surface water erosion.

The slumps for the most part are located at the contact areas where the volcanics are above the sediments. Sediments erode faster than the volcanics, which causes undercutting and removes the support of the overlying volcanics. Consequently, the slump failures occur. The undercutting is caused by natural erosion, construction and wave action.

A large percentage of lower slopes in the area of the marine sediments is covered with 5 to 15 feet of landslide debris. This can be recognized in many of the road cuts by the loose condition and inclusion of many subangular to subrounded volcanic rock fragments.

There do not appear to be any mineral resources other than rock. The only rocks of any value or use are the basalt flows. This rock is usually of minimal thickness, commonly less than 20 feet thick and rarely breaks into sizes usable for jettys or dimension stone.

Appendix V contains information on geologic hazards.

B. SOILS Seventeen soils series were identified and mapped by the Soil Conservation Service within the boundaries of the Cascade Head Scenic-Research Area. The soils within these 17 series can be generalized into 9 basic groups. They are: sandy soils of beaches and dunes; rock and soil debris on the sea cliffs; active landslide areas; river flood plains; terraces; tidal flats; silty and clayey soils from sedimentary rocks; silty and clayey soils

3/ See Section #3 of this report for response unit information.

from basaltic rock; and mixed older landslide deposits. These 9 basic groups were used as one of the components in the formation of response units. 4/

Major, but not all-inclusive, hazards or restrictions associated with these soil groups are:

Sandy soils of beaches and dunes:
- wind-water erosion, very rapid percolation

Rock and soil debris on the cliffs:
- landslides, steep slope, uneven surfaces

Active landslide areas:
- landslides, high ground water, slow percolation

River flood plains:
- flooding, high water table

Terraces:
- high water table

Tidal flats:
- flooding, high water table, low bearing strength

Silty and clayey soils from sedimentary rock:
- slow to moderate percolation rates, moderate to severe erosion hazard, easily compacted

Silty and clayey soils from basaltic rock:
- slow to moderate percolation rates, severe erosion, easily compacted

Mixed older landslide deposits:
- landslides, surface erosion hazard, high water table, slow percolation

4/ See Section #3 of this report for response unit information.

C. HYDROLOGY

1. Subsurface Hydrology Groundwater occurs in the zone of saturation below the water table. The water table fluctuates in response to recharge and drawdown, usually caused by seasonal changes in precipitation. Groundwater availability requires sufficient rock porosity and permeability and sufficient precipitation for recharge.

Dune sands yield substantial quantities of water (up to several hundred gallons per minute) but the water table must be maintained several feet above sea level to prevent sea water intrusion. Much floodplain and terrace land has good groundwater potential for wells if the well taps water below the surface water table, or at the base of long slopes. Porosity and permeability in sedimentary formations is low; little groundwater infiltration and storage occurs and wells frequently run dry or tap only the soil mantle waters. Groundwater in basalt rock is generally limited to porous fracture zones, but large groundwater reservoirs may occur locally.

Groundwater quality in dune sands is generally good, but due to high percolation rates, there is pollution potential. Tidal flats produce brackish water. Groundwater in alluvium is satisfactory, but shallow and subject to contamination. Water in sedimentary rocks is often high in iron, sulfur, hydrogen sulfide, or chloride. Water in basalts is generally of good quality, but may have high pH values.

To aid in the formation of response units, three water table classes were deliniated. They are classified as high (0-3 feet deep), medium (3-6 feet deep), or deep (more than 6 feet deep or lasting less than one month). The response units 5/ making up each water table class are listed below:

High Water Table		
BS	LFP	TF

Medium Water Table		
ALS	EAT	UFP
LSD		

Deep Water Table		
AD	SD	SCAR
SRHC	SRLC	BBSR
BSDR		

Seasonal high water tables occur during the November-to-April period.

2. Surface Hydrology About 85% of the mean annual precipitation for the Scenic-Research Area is discharged as streamflow. The mean discharge for the Scenic-Research Area is 66 million gallons per day and if regulated, could satisfy the municipal requirements of 650,000 people. The mean flow of the Salmon River at Otis is 624 cubic feet per second (cfs).

About 85% of the surface discharge occurs from November through April, and only 3% from July through September. Average flow of the Salmon River is 1,356 cfs in February and 51 cfs in August.

Stream flooding commonly occurs from November through February. The mean annual flood in the Salmon River is 9,200 cfs, and floods over 10,000 cfs occur every 2½-3 years. Ocean flooding from storm waves, additive waves, and seismic sea waves is less common but can cause extensive damage. The mean minimum summer flow in the Salmon River is 18 cfs.

Although surplus flows exist in the Salmon River most of the year, the surface water supply is barely adequate for current consumptive water rights, which total 95% of the mean minimum summer flow. To protect fisheries values, storage is essential if much surface water use expansion is to occur. Surface water quality is generally good to excellent. There are four anadromous spawning streams (Deer Creek, Salmon Creek, Crowley Creek and Caulkins Creek) with a total length of approximately 10½ miles within the Scenic-Research Area. Cliff Creek and Rowdy Creek have a total length of 2½ miles and are inaccessable to anadromous fish, but have a resident population of cutthroat trout. About 98% of the annual sediment discharge (150-350 tons per square mile) is discharged from November through March, mostly during short periods of intense rainfall and runoff. Maximum summer water temperatures are 58°-62° in small, undisturbed upland streams and 67°-75°F. in the Salmon River above tidewater. Total dissolved solids in small upland streams range from 25 to 65 ppm.

The entire length of the Salmon River within the Cascade Head Scenic-Research Area is influenced by tidal action. Salt water intrusion extends midway between the new and old Highway 101 bridges.

To aid in the formation of response units 6/, three flood frequency classes and four

5/ See Section #3 of this report for the names and descriptions of these response units.

6/ See Section #3 of this report for response unit information.

hydrologic soils groups were formed. Stream flooding may occur anytime from October through April, but is most common from November through February. Tidal flooding may occur during any season, but is most common during the winter. Flood frequency is classified as frequent (more often than once every two years), occasional (Less often than once every two years), or never (no reasonable possibility of flooding). The response units 7/ making up each flood frequency class are listed below.

Frequent Flooding		
BS	LFP	TF

Occasional Flooding	
SCAR	UFP

Never Flooding		
AD	SD	ALS
EAT	SRHC	SRLC
LSD	BBSR	BSDR

Hydrologic soil groups are used to estimate runoff from rainfall by considering the minimum infiltration rate of the bare soil after prolonged wetting. Group A soils have low runoff potential and rapid infiltration rates even when thoroughly wetted. Group B soils have moderately low runoff potential and moderate infiltration rates when thoroughly wetted. Group C soils have moderately high runoff potential and slow infiltration rates when thoroughly wetted. Group D soils have high runoff potential and very slow infiltration rates when thoroughly wetted. The response units 8/ making up each hydrologic soil group are listed below.

Group A		
AD	SD	BS
SCAR		

Group B		
EAT	UFP	SRLC
LSD	BSDR	

Group C		
ALS	LFP	SRHC
BBSR		

Group D
TF

D. VEGETATION A wide variety of plants occuring in distinct communities exist within the Cascade Head Scenic-Research Area. Plant communities are constantly changing. This change occurs in a predictable fashion, with one plant community replacing another. Eventually, a community develops that can only be replaced by itself. This is called the climax community.

The Cascade Head Scenic-Research Area lies within the Sitka spruce vegetation zone, which is only a few miles in width and is directly influenced by the ocean. On-shore winds, frequent summer fog, and large amounts of precipitation help to create and maintain this Sitka spruce vegetation zone.

Extensive stands of conifer covered most of the Area prior to settlement in the 1850's. These stands were created by natural reforestation following periodic wild fire. A few grasslands overlooking the ocean were present. These grasslands which originally were created by fire were maintained by fire, grazing, and the harsh on-shore winds that exclude tree establishment. Since the 1850's,

7/ See Section #3 of this report for response unit information

8/ See Section #3 of this report for names and descriptions of these response units

extensive man-caused changes have occurred. Large areas of forest were cut over, some several times. Some forests were cut or burned to obtain crop and pasture land.

Detailed vegetative mapping has been completed for the Cascade Head Scenic-Research Area. However, for this report, the detailed mapping is lumped into seven major vegetative communities:

1. Grasslands - Included in this community are upland grasses, floodplain grasses, salt marsh grasses, diked marsh grasses and beach grass communities.

2. Shrub communities - Two basic shrub communities were identified and mapped. The first type which was mapped as "S-1" represents a shrub community which remains after clear-cut logging. The second type of community which was mapped as "S" may have been caused and maintained by fire or harsh on-shore winds, but is a more permanent type than "S-1" which will eventually revert back to trees.

3. Deciduous tree stands - This plant community is composed primarily of an overstory of red alder with a scattering of big leaf maple. However, Sitka spruce, western hemlock and Douglas fir may comprise from 1-20% of these stands.

4. Conifer-Deciduous - This mixed stand of conifer and deciduous trees represent a situation where neither conifer nor deciduous dominate. Red alder is the major deciduous species and Sitka spruce and western hemlock are the major conifer species. Small amounts of Douglas fir and western red cedar may also be found in most stands.

5. Conifer stands - Two major conifer stands are present in the Area. The first contains various mixtures of Sitka spruce, western hemlock and Douglas fir. The second consists of lodgepole pine.

6. Barren - This mapping unit contains little or no vegetation. An example of lands mapped as "barren" is an area of recent landslide activity.

7. Made-land - This mapping unit includes man-made developments such as roads, parking lots, landfills or quarries.

These plant communities are reflected as the biotic portion of the response units, as detailed in Section #3 of this report.

The Cascade Head catchfly is a perennial herb of the pink family (Silene Douglasii oraria) which is only known to occur on Cascade Head. It is a small plant, less than 18 inches tall, with fleshy leaves. The flower is white or pinkish. This plant is one of the approximately 3,000 plants classified as threatened or endangered in the United States by the Smithsonian Institute.

Tansy ragwort, an introduced noxious weed, was mapped separately. Introduced into Oregon during the 1920's, it has spread throughout western Oregon and portions of eastern Oregon. Tansy is of concern to livestock owners because it contains a paralyzing alkaloid. Tansy ragwort occurs throughout many of the grass communities within the Cascade Head Scenic-Research Area.

E. TIMBER The Cascade Head Scenic-Research Area is located within the Sitka spruce vegetational zone. There are 7,429 acres of commercial forest land within the Area supporting a total volume of approximately 394 million board feet of timber. All of this commercial forest land is not in timber production at this time and it is unlikely that it will be returned to timber production because of current uses and ownership.

Approximately 50% of the timber resource on the Area has been influenced by man. Most of the lands have been cut over and/or burned over in the past. Until about 1910, repeated burning to clear the land for cultivation or pasture was common. When this practice was curtailed, nature responded

by producing most of the present 50-60 year old stands of mixed conifer and deciduous species in the Area. The Neskowin Crest Natural Area provides a vivid example of the vegetation climax which the Area ultimately will succeed to under natural conditions.

The following timber volume estimates were determined by standard Forest Service timber inventory processes. Data from the Hebo Ranger District and stand examinations that were conducted on National Forest lands within and adjacent to the Cascade Head Scenic-Research Area were used in the calculations. This base data was extrapolated for the estimate on private land as no inventory data for these lands was available. Some of the private land classed as commercial forest in this estimate is currently not being used for that purpose, so the volume estimate for the private land should be used in that context.

VOLUME IN MMBF

Species	Private	National Forest	Other Public	Total
Hardwood	19.84	8.76	1.77	30.37
Conifer	133.50	219.99	9.66	363.15
Total	153.34	228.75	11.43	393.52

F. CLIMATE Cascade Head Scenic-Research Area has a temperate, humid, maritime climate dominated by Pacific air. Winters are mild, cloudy, and wet: summers are cool, clear, dry, with morning fog.

Mean annual temperature is about 51°F. Temperature regimes are milder on the immediate coast than inland portions of the Area. Summer maximum temperatures average 88°-90°, and winter minimum temperatures average 19°-24°. Subzero temperatures are unknown. The frost-free season averages 278 days on the coast and 196 days further inland.

Annual precipitation at the Cascade Head Experimental Forest headquarters averages 89.05 inches, with measurable precipitation falling 190 days per year. Snowfall is infrequent. Seventy percent of the annual precipitation falls during the November-to-March wet season, and only 10 percent in the June-to-September dry season. Annual precipitation under the timber is 10-35% less than in the open in fog-free areas and up to 30% more in the coastal fog belt.

Mean relative humidity is 80%, and can drop 15-20% during east summer winds. About 35% of the days are clear, and 44% are cloudy. Heavy fog occurs about 43 days per year.

Prevailing winds are from north or northwest in summer, and from southeast to southwest in winter. Although average monthly wind velocities range from 4 to 16 miles per hour, continuous velocities of 15-25 miles per hour are common along the immediate coast. Winter wind speeds of 40-50 miles per hour occur several times per month on the immediate coast. Although hurricane-speed winds (74 miles per hour plus) are not unusual during this period, and gusts have been recorded over 100 miles per hour, wind velocities in lower elevations can be expected to reach 100 miles per hour only once in a hundred years. The climate of the Area is generally not overly conducive to outdoor recreational activities. The preponderance of cool, wet, stormy days during fall, winter and spring normally restrict recreation use to the summer months. The sunny and relatively cool days strongly attract people from other parts of Oregon and the nation who are subjected to 90°-100° heat for much of the summer.

Reports obtained from the Oregon Department of Environmental Quality indicate that the Cascade Head Scenic-Research Area is a part of their North-

west Oregon Air Quality Control Region. This Region has only a few well dispersed sources of pollution. Air ventilation to carry pollutants away or disperse them is good. The report places the Scenic-Research Area in a Priority 3 category. This category has the least amount of sulfur dioxides, particulate matter, carbon monoxide, nitrogen dioxide, and photochemical oxidents. The reports cover information from D.E.Q.'s hi-volume station at Astoria, the only coastal city with population above 10,000. They state there is little reason to believe any other community in this Region would show higher levels.

G. ESTUARINE CONDITIONS The entire Salmon River in the Cascade Head Area is estuarine (subject to tidal effects). The mouth of the bay is partially exposed to ocean waves. The upstream limit of salt water intrusion is about 3.6 miles upstream from the mouth, or approximately ½ mile above the Highway 101 bridge. The upstream limit of flow reversal is about 4 miles above the mouth. The head of tidewater (upper limit where the river rises and falls in response to the tides) is about 5 miles above the mouth of the river, or just upstream from Otis.

The Salmon River estuary has a mean tidal range of 6.0 feet, a diurnal tidal range of 8.2 feet, and an extreme tidal range of 17.0 feet. The total estuary area is 204 acres, making it the second smallest on the Oregon coast. The submerged land portion, below mean low water (-2.5 feet mean sea level), is 78 acres and is owned by the State. The tideland portion, between mean low water and mean high water (3.5 feet mean sea level) is 126 acres. Extreme high tide is 10 feet above mean sea level.

The Salmon River estuary was classified as a Type IX or drowned estuary by the Oregon Coastal Conservation and Development Commission. These are estuaries that have formed in the mouths of inundated river valleys and usually retain the form of a valley in their cross-section allowing a great deal of tidal flushing to occur". 9/

On in-coming tides, fresh water flows on top of the in-coming salt water. In the Salmon River estuary, there is a partial mixing that occurs, as compared with other estuaries where there is a sharp line between the two types of water. The salinity of the water increases during the summer because of the low volume of water in the river.

The water temperature in the Salmon River estuary is quite cool and stable due to the ocean influence and varies seasonally between 40° and 65°F. This is due primarily to the cool coastal climate and the relatively stable and cool ocean temperatures.

The channel bottom gradient is essentially flat, so tidal direction alone determines the direction of flow in the river. As the Salmon River slows down and spreads out, it deposits sediments in the low-gradient zone. These sediments are primarily clays and silts.

For inventory purposes, the Salmon River estuary was classified into five major subheadings: Floodplain, Surgeplain, Tidal marsh, Tidal mud flat and Thalweg. 10/

1. Floodplain - Floodplains are flooded by downstream-moving river waters and have fresh groundwater throughout the year. Lower Floodplains are flooded at least once every 2 years, and Upper Floodplains are flooded an average of once every 10 years.

9/ ESTUARINE RESOURCES OF THE OREGON COAST, by the Oregon Coastal Conservation and Development Commission, September 1974.

10/ Classification terms from Wolf Bauer, Shore-Resource Consultant.

The floodplain lands in the Area are chiefly slack-water areas that are not exposed to high flow velocities, and are located almost exclusively east of Highway 101.

2. Surgeplain - Surgeplains are dominated by the river system, and are flooded several times each winter by slack river waters backed up into them during bankful stages and high tides. In summer, low freshwater flows allow the marine element to dominate the groundwater system, and the subsurface hydrology of the surgeplain is dominated by saline water out of the groundwater system. In much of the surgeplain, halophytic plants may dominate due to saline groundwater and daily subsurface saltwater surges during most of the year. Surface inundation is overwhelmingly by fresh river water, and the surface soils have predominantly fresh water regimes.

The upstream limit of the surgeplain is the upstream limit of flow reversal, and even the natural surgeplain lands in the Area are located almost exclusively west of Highway 101. Diking and draining surgeplains raises the land hydrologically, transforms it into floodplain. At present, the true surgeplain operates only in the undiked marshlands west of Highway 101.

3. Tidal Marsh - Tidal marshes are the vegetated portion of the estuary's tidelands, are dominated by the marine system, and are flooded an average of once or twice daily by saline water in response to the tidal cycle. Tidal marshes comprise an extremely small portion of the Salmon River estuary and are located exclusively west of Highway 101.

Tidal channels within the tidal marsh experience four changes in flow direction daily due to tidal cycles, but display geomorphic features similar to terrestrial streams with constant unidirectional flow. The channels are cut headward into the surgeplains by ebb tide currents, and exhibit sinuous, dense, complex drainage patterns. Ephemeral deltas and fans form as small tributary channels empty into major trunk segments during ebb cycles. Meander scars are marked by distinctive salt marsh vegetation, and neck cutoffs form in tidal meanders as the drainage system seeks maximum efficiency.

4. Tidal Mudflat - Tidal mudflats are the unvegetated portion of the estuary tidelands, are dominated by the marine system, and are flooded twice daily by saline water in response to the tidal cycle. They comprise a very small portion of the estuary and are located on either side of the river channel in the lower reaches of the estuary. Scattered eel grass beds and a thin layer of algae are found on these mudflats.

The hydraulic flow characteristics of the Salmon River control the size, shape and form of the mudflats, which are actually point bars deposited by the river on the inside banks of meander bends. During high streamflows, these flats serve as relief channels for portions of the river current. Tidal channels extend across the mudflats from the marshes to the river channel.

Marsh growth results from sediment deposition from the Salmon River which produces vertical and lateral accretion in the mudflats. Only about 1,000 of the 14,000 tons of sediment delivered annually by the river is deposited in the estuary, most of that 1,000 tons is deposited in the tidal mudflats.

Tidal action contributes to marsh growth. Flood tides drag sediments from the lower flats up to the upper flats, and ebb tides carry sediments from the marsh down the tidal channels and deposit them in the upper flats. The ebb tide deposition from the tidal channels is the more significant of

of the two. The marsh is thus built outward onto the mudflat through sedimentation from river deposition and from flood and ebb tides. Damming the tidal channels with marshland dikes has cut off the ebb tide sedimentation completely, and has probably slowed the marsh growth process significantly.

5. Thalweg - The main river channel (thalweg) forms the estuary's submerged lands, and is dominated alternately by the river system and the marine system. During low summer streamflows, the geohydraulics of the channel are relatively stable, and sediments are gently flushed, shifted and redistributed by the tidal currents. High water streamflows raise the river's hydraulic gradient and activate the geohydraulic processes of channel scour, erosion, and sedimentation. During floodflows, the river's hydraulic gradient is at a maximum (especially during ebb tides), and so dymanic geohydraulic activity is at a maximum. Probably 98% of the geohydraulic work is done from November through March, and 80% is done in only 40 days during those months. The overall trend is for the river to deposit sediments (especially in the mudflat point bars), to raise the level of the land, and to create a completely "river channel" system with narrow thalweg bordered by floodplain. The upstream migration of active sand dunes has hastened this process near the mouth. Sediments paving the channel bottom are primarily sand downstream from the boat ramp and silts and clays upstream.

River Channel System - Geohydraulically, the Salmon River is an "old" estuary system. Younger estuaries progress downstream from floodplain to surgeplain to tidal marsh to tidal flat to open bay. The Salmon River estuary is dominated by floodplain (mostly east of Highway 101) and surgeplain (mostly west of Highway 101), has relatively little tidal marsh and tidal flat, and has virtually no open bay at all. The system is basically a "river channel" system in which the usual downstream migration of floodplains and surgeplains and the filling-in of open water areas are naturally well advanced. The outside banks of channel meander bends are erosion areas, and the inside banks are deposition areas.

Bridges, dikes, and earthfill jetties all constrict the cross-sectional area of the river channel in the estuary. Increased peak flood stages, floodflow velocities, and bank erosion may result due to concentration and diversion of erosive river and tidal currents. Evidently, bridge and dike construction have significantly aggravated flooding problems in the Otis area and bank erosion in the lower estuary areas.

Currently, the boat ramp dikes are acting as small jetties, creating a jagged outside meander bank that keeps the main current out from the bank, lowers the deflection of the curving current, creates eddy currents around the boat ramp, dissipates the energy, and lowers the power thrust against the opposite sand dune bluff. The boat ramp is filling in with sediment, and should continue to do so as long as the dikes remain, because they have created deposition conditions in the boat ramp areas. Complicated hydraulic behavior exists in this lower estuary section due to highly variable tide-streamflow combinations, and bank erosion and cavitation potential is aggravated by the non-cohesive character of the sand bluffs, so that any structure placed in this portion of the river is subject to greater-than-usual risks of geohydraulic damage as well as causing down and upstream channel modification. Any dredged area in the unconsolidated sediments of this lower estuary would probably be filled in completely within two years, and would accelerate bank erosion as the dredged material creeps back to its angle of repose.

H. WILDLIFE Wildlife species using the Area were identified, and their occurance, abundance, and habitats were recorded. The legal status (e.g. rare, endangered, game animal...) given wildlife by State

and Federal laws was reviewed. The nature and extent of the commercial and recreational opportunities wildlife provide were identified. An index to the economic value of wildlife resources was developed.

Data on wildlife resources were obtained from literature, personal communication with area residents, Hebo District personnel, researchers, the Oregon Department of Fish and Wildlife, and during two years of intermittent field work by Forest Service wildlife biologists.

Species Present The Area is currently used by 378 native species; 230 birds, 56 mammals, 12 amphibians, 6 reptiles, and at least 74 fish (Appendix III - Table 1 and Appendix Table 3). Only a few of the thousands of invertebrate animals (those without backbones) were inventoried (Appendix III, Appendix Table 1). The abundance and occurance of these species vary annually and seasonally due to natural factors.

Three native species were eliminated from the Area prior to 1915 (Appendix III, Table 2). Population of seven exotic species from other parts of the United States or other countries have become established on the Area. (Appendix III, Table 3)

Birds - Birds are the most numerous and conspicuous animals. Of the 230 species of birds present, 99 reside on the Area during the entire year, 44 are summer residents, 2 are summer visitors, 49 are winter visitors, 34 are migrants, and 2 are irregular visitors. Residents and summer residents are mostly song birds, and with a few exceptions, nest on the Area. A few birds, such as the Heerman's gull, visit the Area in late summer after nesting is completed in other climes. Winter visitors are primarily waterflow or shorebirds, and occur on the Area from fall through spring. Most migrants are shorebirds seen briefly in spring, late summer and fall, while traveling to wintering or breeding grounds. Irregular visitors occur periodically. Because the seasonal occurence of birds overlaps, there are at least 120 different species present at any one time.

Mammals - Fifty-two species of terrestrial mammals and four species of marine mammals are present. Except for several species of bats which may migrate south for the winter, all other terrestrial mammals are residents of the Area. The occurence of marine mammals differs among species. The harbor seal is a resident; the California and northern sea lion are seasonal visitors; and the elephant seal is an occasional visitor which may frequent the Area at any time of the year.

Amphibians - The Area is inhabited by 12 species of amphibians; 8 salamanders, 3 frogs, and 1 toad. Amphibians are sedentary residents of the Area, and most species are quite inconspicuous.

Reptiles - Reptiles on the Area are represented by six species; five snakes and one lizard. Like amphibians, reptiles are sedentary and inconspicuous residents.

Fish - At least 74 species of fish spend all or parts of their lives in the streams and estuary. A large and diverse number of fish are also present in the adjacent ocean. However, these were not identified, except for those species that also occur in the estuary or streams.

The numbers and kinds of fish present in the estuary varies seasonally and annually, primarily as a result of changes in the salinity of the estuary.

Invertebrates - Invertebrate animals are especially numerous in the tidal flats and some rocky ocean beaches (tide pools). These extremely numerous and diverse species form the bulk of the diet for

many vertebrates, especially birds and fish. Invertebrates are essentially responsible for the presence of most other species on the Area. Only a few invertebrates (mussels, eastern soft-shelled clam, sand shrimp, red rock crab, and Dungeness crab are used directly by man for food or bait.

Habitat - Twenty-eight major habitats were identified on the Area (Appendix III Table 4). The typical or preferred habitat(s) of each animal present was determined. (Appendix III, Tables 1 and 2).

Each major habitat contains many smaller habitats (micro habitates) that exhibit differences in soil, moisture, temperature, vegetation, and other numerous conditions. For this reason, many species are found using the same major habitat (Appendix III, Tables 2, 3, 4 and 5). In addition, the habitat(s) used by a specie may vary seasonally.

Endangered, Threatened, Rare, Peripheral and Status Undetermined Species - The Area is used by 26 animals classified as endangered, threatened, rare, peripheral and status undetermined in Oregon or the Nation (Appendix III, Table 6). These animals were given special recognition because their existence is in immediate or potential jeopardy. This condition results from a variety of causes: including loss or change in habitat, over-exploitation, predation, competition, disease or chemicals in the environment. Often several of these factors in combination have caused the decline of a species. Only a few of these species breed on the Area, however, many occur as migrants or winter visitors.

Legal Status - All the wildlife species on the Area are subject to a complex and interrelated set of State and Federal laws (Appendix III, Table 6). The primary purpose of these regulations is to control use of animals by people. To insure a continuous supply of game animals will be produced, regulations change periodically to meet this objective. Both game and non-game species receive protection through these regulations.

Recreational Use - Economic Values - Wild life species on the Area provide a wide variety of recreational opportunities and experiences. Hunters, fishermen, trappers, wildlife photographers and viewers visit the Area, specifically because of the wildlife. The quality of the experiences enjoyed by other visitors is enhanced by their encountered with wildlife.

Over 3,000 recreational use trips are made to the Area annually for fishing, hunting or trapping. The expenditures made by these people are in excess of 250,000 dollars. (Appendix III, Table 8)

Commercial Use - Economic Value - The Salmon River system produces a major run of coho and chinook salmon. Adult salmon use the estuary as a migration route and holding area. A few streams on the Area provide spawning opportunities. The streams and estuary also provide rearing areas for juvenile salmon.

It was estimated the Salmon River system annually contributes over 21,000 fish to the commercial salmon fishery. The dockside value of these fish is in excess of 140,000 dollars. In contrast, the 7,858 salmon from this system caught by sports fishermen on the ocean result in an expenditure of about 308,000 dollars. (Appendix III, Table 8).

Key Habitats and Areas - Key Wildlife areas habitats are biologically unique; frequently used by rare or endangered species; limited in extent but used by both a greater number of species and a greater number of individuals; or nesting - resting areas for great numbers of animals.

Bald Eagle Nest - Two bald eagle nests are present. Both nests probably belong to the same pair of eagles. Eagles often construct an alternate nest.

Sea Bird Roosting-Nesting Sites - The ocean cliffs and off-shore islands are used by at least 6 species of sea birds for nesting and roosting. Over 25,000 sea birds have been recorded nesting on these cliffs and islands.

Sea Lion Haul Out - California sea lions frequent the ocean and off-shore islands from late fall through winter. A rocky ocean beach on the Area is continually used as a resting site by the sea lions. Over 300 sea lions were observed on this beach in past years.

Cliff Creek and Chitwood Creek - These small creeks were isolated from other bodies of water by an uplift in the geologic past. Animal communities in these streams were also isolated (No genetic interchange with animals from adjacent areas). These animals are very unique from a scientific point of view. Cutthroat trout are present in Cliff Creek. If these trout were naturally isolated (not planted by people) then a most unique opportunity for studying the effects of genetic isolation on a population exists. This is also true of many of the other aquatic organisms present in both streams.

Great Blue Heron Rookeries - Several reports of great blue heron rookeries (nesting areas) on the Area were received. No rookeries were discovered during this inventory although it is highly probable they are present. The colonial nesting sites of these birds when discovered should be considered key wildlife areas.

Estuary (including Salt Marsh and Tidal Flats). - Estuaries are the most fertile naturally occurring areas in the world. This fertility is a result of the nutrients and organic matter produced by the decaying vegetation of the salt marshes and meadows, washed down by the streams and brought in by tidal action. These nutrients and organic matter stimulate the growth of plankton and invertebrate organisms which are the basic food sources within the estuaries. These food sources attract many small animals to the estuaries which in turn attract other wildlife species.

The greatest number of wildlife species and the greatest number of individuals use or live in the estuary environment. The estuary is the preferred habitat of 112 species and typically used by 69 other species. In addition, 51 fish species use the estuary as a migration route for feeding, spawning and as nurseries (Appendix III, Table 2). Shore-birds, waterfowl and oceanic birds use the estuary in great numbers especially during winter and fall or spring migration. The bald eagles (endangered in Oregon) are heavily dependent upon the estuary for fish, which comprise over 90% of their diet.

Riparian Zone - Streams, ponds, fresh water marshes and the vegetation immediately adjacent to them are an integral unit. Following the estuary this riparian zone is the preferred habitat of the greatest number of species- 84 (Appendix III, Table 5). These animals show a decided preference for water loving vegetation present. Waterfowl and shore birds depend on this vegetation to provide them with sites, food and shelter. In addition, many terrestrial species from the surrounding habitats concentrate their activities near the water. These strips of vegetation also maintain the water quality of streams used as spawning and rearing areas by fish.

I. CULTURAL RESOURCES* The Cascade Head Scenic-Research Area (CHSRA) has a history of both Indian and white occupancy and activity. The sites and structures associated with humans in the area are concentrated along the Salmon River estuary, the most open and least rugged part of the Scenic-Research Area.

Sometime in the unknown past, perhaps as long as 500 years ago, the Salmon River estuary became the home of Indians whose culture was oriented toward a maritime setting. By the nineteenth century these people were fully within the general frame of culture employed by Indians from southern coastal Alaska to northern California. The basic features of their culture were the use of the salmon as a primary food, dwelling in plank slab houses, using dugout canoes, excelling in basketry-making, and emphasizing wealth as an individual goal and as a prestige factor in society..

Within CHSRA are six identifiable Indian occupation sites where the Indians maintained either permanent villages or special food-gathering encampments. None of these sites has been excavated by professional archeologists; however, the sites have been identified and assessed by surface analysis. The myth tales of the Salmon River Indians further indicate that Cascade Head, a promentory rising 1,770 feet above the sea, was used as a vigil site. Children on spirit quests at puberty or individuals seeking power or vision retired to that lonely mountain top to fast, dance, and dream.

By executive order of the President of the United States, all of the Cascade Head Scenic-Research Area became, in 1855, part of the Siletz Reservation. This exclusive Indian territory

* See: Stephen Dow Beckham. Cascade Head and the Salmon River Estuary: A History of Indian and White Settlement (1975).

reached from Cape Lookout to the Silcoos River and extended east to the crest of the Coast Range. Although several tribes from southern Oregon were brought to the reservation at the conclusion of the Indian wars in 1856, none initially settled in the domain of the Salmon River Indians. The native inhabitants of CHSRA--the Nestucca on the north and along Neskowin Creek and the Nechesne (Salmon River Indians) on the estuary of the Salmon River--persisted in their old ways. The influence of the reservation was negligible upon these people and through the 1860's the Bureau of Indian Affairs was only vaguely aware of their existence.

In the mid-1870's white settlers began taking squatter's claims along the Salmon River. Perhaps as early as 1851 whites had used the headlands and salt marshes as summer pasture for their cattle, driving them to the region from the Willamette Valley. An Act of Congress in 1875 fixed a line running due east from the mouth of the Salmon River as the new boundary of a diminished Siletz Reservation. All of CHSRA within Tillamook County was at that date opened to white settlement. Settlers began taking cash entry and homestead claims along the lower slope of Cascade Head and in the watershed of Neskowin Creek.

White occupancy of CHSRA in the nineteenth century was limited. A few families that settled in the area were primarily engaged in subsistence living, depending upon cattle grazing, hunting, fishing, and raising of vegetables for food. Between 1895 and 1910 the number of homesteaders within CHSRA increased markedly. The principal factor sparking this activity was the effect of the Dawes Severalty Act of 1887. Through that measure the Indians of the Siletz Reservation agreed in 1894 to allotment of lands. Congress in 1895 threw open to white settlement all unalloted properties within the former reservation. In the spring of 1895 government agents surveyed and conveyed to Indians through trust

management hundreds of acres on both banks of the Salmon River. The allotments, ranging up to eighty acres per individual, were issued not only to the descendants of the Salmon River tribe, but also to Indians who had been brought to the reservation in 1856 from their old homes in southern Oregon.

As allotments became vacant through death or through the passing of trust management, white settlers filed upon the properties. Some of the new homesteaders came to the Salmon River not only because of the availability of land but because they believed that a coastal railway would surely be constructed and their claims would thereby appreciate quickly in value. These dreams of prosperity did not materialize and most of the homesteaders continued to depend upon cattle raising, salmon fishing, and occasional summer employment in the Willamette Valley. Some of the historic structures and sites within CHSRA are associated with the allotment and homestead period.

Major changes came to the Salmon River estuary with the building of the Salmon River Highway and the Oregon Coast Highway in the 1920's. Suddenly this isolated land was opened to outsiders and its products had transportation to market. In 1923 a road was constructed from Otis to Neskowin and in 1928 a highway opened for automobile traffic over the former Salmon River Toll Road from the coast to the Willamette Valley. With transportation available, stock farmers turned to production of dairy products. Several barns and farm houses within CHSRA date from this era.

The highways also brought outsiders seeking recreation. In 1933 the town of Three Rox was platted at the mouth of the Salmon River as a village catering to tourists. Although the town's development was negligible, visitors from the outside began fishing, crabbing, and digging for clams in the Salmon River estuary. In 1937 the Y.W.C.A. began acquisition of lands at the south side of the river's mouth and in 1938 opened its first season at Camp Westwind. Several of the sites and structures associated with tourism and recreation within CHSRA date from the 1930's.

World War II slowed tourism on the Oregon coast. Blackouts, rationing of gasoline, and maintenance of coast patrols at lookouts on the headlands at the river's mouth discouraged visitors from using this area. Since 1945, however, public interest in the Cascade Head area has mounted steadily. The building of vacation homes, the establishment of the Nature Conservancy on the western face of the headland, and the increased use of hiking trails are evidence of the diversified human use of this land. Old activities such as limited logging and dairying, however, persist.

The legacy of human activity within CHSRA is that for generations both Indian and white occupants have resided in this region and found happiness and fulfillment and yet have not significantly altered the natural features of the land.

J. VISUAL - The Cascade Head Scenic-Research Area occupies approximately 5 miles of coastline within the Siuslaw National Forest. When land meets water, an extreme amount of visual variety occurs. This is particularly true in the Scenic-Research Area, where the flatness of the ocean surface meets the rugged, almost sheer cliffs of the Headland. The flat estuary bottom and the side hills which raise to the top of Cascade Head also create variety and interest in the landscape. Certainly, this was one of the important factors Congress considered in establishing the Cascade Head Scenic-Research Area.

The Scenic-Research Area contains areas that exemplify all visual situations that are contained within the entire Siuslaw National Forest; that is, the shoreline, estuary, low land valleys, and the coastal mountain character. For this reason, the Scenic-Research Area is valuable as a mini-showcase

which applies to the entire Siuslaw National Forest.

The viewer's position is important in determining the amount of interest or attraction the landscape will offer. It is also important in determining the potential conflicts between uses and activities and the scenic qualities of the Area. The entire Area was mapped to determine what land could be seen from existing travel routes and visitor concentration points. Some of the more important or critical travel routes or concentration points are the north and south overlook, the Nature Conservancy Trail, the view along the entire length of Highway 101 (and particularly important is the view where Highway 101 crosses the estuary) and finally, the view from Highway 18 from Otis to the junction with Highway 101. Of lesser importance is the view from Three Rocks Road and individual residences within the Area.

In addition to the "seen" area mapping, the entire Area has been mapped for variety class. Variety class is an indication of the amount of interest the landscape provides for the view. As with "seen" area mapping, variety class mapping was done from existing routes, and visitor concentration points. Additional information on "seen" area and variety class mapping is contained in the files of the Planning Team in the Hebo Ranger Station.

SECTION 2 - HUMAN USES AND ACTIVITIES The following summaries reflect man's uses and activities within the Scenic-Research Area.

A. LAND USE AND LANDOWNERSHIP - There are a total of 9,670 acres within the Cascade Head Scenic-Research Area. Of those, 5,764 acres are in Tillamook County and 3,906 acres are in Lincoln County. Of this total acreage, 53% is in private ownership, 40.2% is managed by the Siuslaw National Forest; the State of Oregon owns 5.4%; the two counties own .2% and 1.2% is managed by other Federal agencies. (Public Law 93-535, which created the Cascade Head Scenic-Research Area, provides for transfer of other Federal lands to the Siuslaw National Forest if the responsible agency concurs.)

Six subareas were created by Public Law 93-535. The following is a tabulation showing the acreage contained in each subarea 11/ and the percent of the total area each subarea occupies.

Subarea	Acres	%
Estuary and Associated Wetlands	1,260	13
Lower Slope-Dispersed Residential	942	10
Upper Timbered Slope	2,842	30
Headlands	3,995	41
Sand Dune-Spit	198	2
Coastline	433	4

There are no known mineral deposits within the Area, however, there are two rock quarry sites. One of these is on National Forest land, and has been closed. The other, on private land, is operated intermittently.

There are five platted subdivisions within the Cascade Head Scenic-Research Area. The majority of the 107 permanent residences within the Area are in one of these five subdivisions. In addition to these

11/ See Map in Appendix I for location of subareas.

permanent residences, there are approximately 55 travel trailers more or less permanently parked at Pixieland.

The following are current situation statements for each of the five subdivisions within the Scenic-Research Area.

1. Cascade Head Ranch Subdivision: Cascade Head Ranch is a planned development in Tillamook County. It is designed for 101 lots on about 110 acres. Individual lot size varies from $\frac{1}{4}$ to $\frac{1}{2}$ acre with the remaining area in common ownership. All roads, electric and telephone lines and a water system were in place on 6/1/74. There were 34 residences and a 14-unit condominium in place on 6/1/74. Additional buildings are the River House and water treatment plant, which are in common ownership, and the Sitka Center, an art and ecology education center. All existing structures have subsurface disposal systems in place. The condominium units have a common subsurface sewage disposal system designed and built for the 14 existing units and 16 additional units planned for the area. According to county records on 8/1/75, an additional 19 lots had county approval based on individual lot inspection for installation of a subsurface sewage disposal system.

2. Three Rox Subdivision: Three Rox is a 307 unit subdivision on 43 acres in Lincoln County near the west end of Three Rocks County Road. Lot sizes average 1/10 acre. It is an old subdivision, having been recorded in 1946. There were 6 residences in place on 6/1/74, and none have been built since.

None of the undeveloped lots have water or electric hookups in place and it is doubtful if some of the lots could get septic tank approval. Most roads were roughed in about 1950, but only three have been maintained. The others have grown over to brush and are impassable.

3. Sea River Subdivision: Sea River is a 71 lot subdivision on 37 acres in Lincoln County along Three Rocks County Road. Lot size averages 1/3 acre with a common area totaling 8 acres along the north side of the subdivision. There were two houses in place on 6/1/74 and there has been some new construction since. The Forest Service has, since May 15, 1975, received notice of intent to apply for septic tank permits, install septic tanks and apply for building permits for 53 of the lots from 16 owners, plus one notification from Thomas Ray, developer, to cover all 71 lots. The present water system, a well and pressure tank system, is adequate to serve only 20 lots and Thomas Ray has notified the Forest Service of his intent to drill two more wells and construct a 37,000 gallon reservoir. Electric and telephone service is in place to the lot line on all lots. The water system pipes are laid. All roads are in place and all are gravelled, except for 500 feet of short side roads in two locations.

4. Nechesne Estates Subdivision: Nechesne Estates is a 14-unit subdivision on 75 acres in Lincoln County, about one mile west of Highway 101 on Three Rocks Road. Lots average five to six acres in size. None of these lots have been sold to other than members of the developer's family and there was only one residence in place on 6/1/74. Electric service is available at the lot line. Water system will have to be developed. Preliminary septic tank inspection and approval for each lot has been granted by the county. All roads have been roughed in with the main roads gravelled prior to 6/1/74.

5. Tamara Quays Subdivision: Tamara Quays is a mobile home development of 107 lots on 14 acres along Highway 101 near the intersection with Highway 18. Twelve lots were occupied on 6/1/74. All lots have water and electric hookups. A sewage system is in place but has been judged inadequate by Lincoln County for additional hookups.

Other significant developments within the Scenic-Research Area are:

1. Camp Westwind, a Y.W.C.A. Camp, is located on 703 acres of land at the mouth of the Salmon River. There are several different camp sessions offered at Westwind, besides the traditional girls' camp. Other regularly offered camps are Pioneer Ranch (a horseback riding unit), Counselors in Training, and Girls' and Boys (Coed) camp. Special programs offered for children are the Aquatic Camp, River Canoe Trip, Backpack Trip, Drama Workshop, Raku (Pottery) Workshop, and Horse Pack Trip. Day camp sessions are also offered. Westwind also offers sessions for parents and their children. At this time, there are four of these sessions: Mother-Child, Single Parent-Child, Family Camping, and Sand, Sea and Self. The camping facilities will accomodate 125 people, including the staff, at one time. The facilities were used by 6,236 people in 1974. (996 campers and 5,240 renters)

2. The town of Otis and Otis Junction is located on the east side of the Scenic-Research Area where old Highway 101 joins Oregon Highway 18. This town contains a post office, cafe, gas station, garage and grocery store. There are several houses, a community center, a fire station and a six-unit motel close to the junction. The town site is owned by one individual. Average daily traffic count on Highway 18 at the Junction in 1974 was 5,000 vehicles.

3. Pixieland, an amusement complex, is located at the junction of U.S. Highway 101 and Oregon Highway 18. Existing facilities consist of a gas station, a travel trailer park with 122 spaces, a swimming pool, a theater, and an amusement park. The corporation has advised the Forest Service of its plans to modify and expand the existing facility. The total plan calls for removing the amusement park and adding the following: a 38-unit motel, a restaurant, a commercial center, 18 new apartment units, 22 apartment units that would utilize the existing buildings, 35 mobile home spaces and a 78-unit townhouse complex.

4. There are a variety of other uses that exist in the Area: private homes, farms, a boat ramp, an education center and others. Section 3 of this report evaluates several uses and activities for land suitability. These uses and activities that are evaluated are representative of those presently within the Area or those that may be considered in the management plan.

B. TRANSPORTATION FACILITIES

1. Roads

	Existing Roads (miles)			
	Paved	Gravel	Dirt	Total
Forest Service		8.8		8.8
State	8.2			8.2
Tillamook County	.5	.7		1.2
Lincoln County	4.0			4.0
Private	2.5	6.9	3.0	12.4
Total	15.2	15.4	3.0	34.6

Forest Service Road No. S-61 runs west from U.S. Highway 101 at Cascade Head Crest and furnishes access to the south viewpoint and the trails to Hart Cove, Neskowin Crest Natural Area, and the Cascade Head Pinnacle Area. The first one mile is in poor condition, the remainder of the road is in fair to good condition. It is estimated to cost $100,000 to bring the entire road up to good condition. Road No. S-630 runs north and west from S-61 and furnishes access to the north viewpoint. Road No. S-683 runs from U.S. Highway 101 up Fall Creek. It is blocked in two places by washouts within the first mile. It would be possible to use this road as an alternate

route for the proposed Oregon Coast Trail. Roads S-61-O, S-61-P, and S-61-I are short spurs constructed to serve timber sales. They are becoming closed by brush and alder due to lack of use and/or maintenance.

U.S. Highway 101 runs north and south through the eastern part of the Area, and is the main arterial. State Highway 18 is the main access from the Willamette Valley to the Coast for this area. Both highways are in good condition and well maintained by the State.

The Three Rocks Road starts at Otis on Highway 18 and runs north and west. It includes a portion of old Highway 101, crosses the new Highway 101 and ends just east of the mouth of the Salmon River. Four miles of this road is in Lincoln County and one-half mile in Tillamook County. It serves as the main access for most of the residential land north of the Salmon River and access to the Nature Conservancy Trail. The road is well maintained by the counties. The west end of the Three Rocks Road serves the County Boat Ramp and the Three Rox Subdivision.

The 12.4 miles of private roads serve subdivisions, residences, a quarry, logging areas, and agriculture land.

The following table gives the 1974 ADT (Average Daily Traffic) for the above roads:

Road		
U.S. 101	(At Three Rocks Rd)	1,900
State 18	(At Otis)	5,000
S-61		30
S-630		10
Three Rocks County		260
Lower Three Rocks County		40
Private Roads - vary from		5 to 50

2. Trails

Jurisdiction	Miles
Forest Service	6.0
Y.W.C.A.	4.0
Nature Conservancy	2.3
Total	12.3

The West Fall Creek Trail, 2 miles in length, has not been maintained for over 20 years and is practically non-existent. Portions of this trail were obliterated during logging. However, by utilizing the old tractor roads, and construction of about ¼ mile of new trail, this trail could be made useable.

Trail No. 1303 serves as access to Harts Cove and Neskowin Crest Natural Area. Portions of it traverse some wet areas and will need to be reinforced.

The Y.W.C.A. maintains 4.0 miles of trails as access to their camp and various points throughout their ownership.

The Nature Conservancy maintains 2.3 miles of trail that is open to the general public. This trail serves the Penacle Area. The north end of this trail ties into F.S. Road S-61. The upper portion of this trail is an old road. The south end of this trail ties into the Three Rocks County Road. In places the tread is worn and reinforcing or relocation is needed.

C. FIRE MANAGEMENT

During the past five years, there were only two Class A fires (¼ acre or less) which occurred within the present Cascade Head Scenic-Research Area. During the same five year period, residential burning permits issued by the State and the Devil's Lake Rural Fire District averaged 36 per year.

The most hazardous fuels are located in recent logging areas where the logging residue has not been treated. The second most hazardous condition occurs in a blowdown area in Chitwood and Cliff Creek drainages. Other hazard areas exist along roads where there is an abundance of dry grass and weeds. Other roadside hazards are quite minimal and constitute more of a visual impact than a fire hazard.

There are intermingled and joint fire control responsibilities within the Area. Initial attack is spelled out in a dispatching plan using the "closest man" concept. A special pre-attack block has been prepared for the Cascade Head Scenic-Research Area, which outlines where and how fire suppression activities will take place.

Even though recent past history shows a low fire incidence, the hazards are there, and the potential for a large fire exists. The risk of this happening will increase as the numbers of users and visitors to the Area increase.

D. RECREATION The Cascade Head Scenic-Research Area is not currently being heavily used by the recreating public. This is primarily due to the lack of facilities and the large quantity of private land within the Area. A table of estimated recreation use follows:

Sites and Areas	MVD 12/
Organization Site	30.9
Boating Site	0.4
Recreation Residence	8.1
Permanent Residence	11.0
Roads	11.7
Trails	3.2
Rivers and Streams	5.1
General Undeveloped Areas	9.6
Total	80.0

12/ Thousands of visitor days. A visitor day is one person for 12 hours

Activities			MVD
Swimming			0.1
Hunting			1.0
Waterfowl	0.7		
Upland Birds	0.1		
Small Game	0.1		
Big Game	0.1		
Fishing			0.8
Hiking and Walking			3.2
Driving for Pleasure			11.7
4-Wheel	11.0		
2-Wheel	0.7		
Bicycling			0.4
Horseback Riding			0.8
Boating			4.3
Motorized	3.5		
Non-Motorized	0.8		
Photography and Painting			1.7
Viewing Outstanding Scenery			5.0
Enjoy Unique/Unusual Environment			3.0
Nature Study			6.0
Acquire General Knowledge and Understanding			8.0
Picnicing			4.2
Gathering Forest Products			
For Pleasure			0.6
Berries		0.1	
Mushrooms		0.1	
Ferns, boughs,etc.		0.1	
Beachcombing		0.3	
Organizational Camping			29.1
Total			80.0

Predictions of future use are affected by many variables, such as the number of additional dwellings permitted within the Area and the number of parking areas, boat ramps, trails, and organization camps that may be provided for the visitors.

The best estimate is that a 10% increase over present use can be expected in the next year or two due to the mere classification of the Area. This use

will occur mainly on the roads, trails and river.

Driving distance from population centers is also an indicator of expected use. The following table indicates population estimates, to the closest 1,000, in 1-hour driving increments from the Scenic-Research Area:

Hours of Driving Time	State		
	Oregon	Washington	Total
1	77,000		77,000
2	1,182,000		1,182,000
3	1,579,000	100,000	1,679,000
4	1,681,000	318,000	1,999,000
5	1,867,000	804,000	2,671,000

Facilities which are provided for public use outside the Area will also influence use within the Cascade Head Scenic-Research Area. The following is a list of present facilities:

State of Oregon

1. "D" River Wayside - 4 acres on U.S. Highway 101 at Lincoln City. Beach access, parking, restrooms, limited picnic facilities.
2. Devils Lake Park - 109 acres off U.S. Highway 101 at Lincoln City. Sixty-eight tent, 32 trailer sites, picnic facilities, paved boat ramp on Devils Lake.
3. Neskowin Beach Wayside - 6 acres at Neskowin on U.S. Highway 101. Beach access with parking and trail to beach.
4. Roads End Beach Wayside - 5 acres off U.S. Highway 101, Beach access, parking.

National Forest

1. Neskowin Creek Campground - 12 units on old Highway 101.
2. Schooner Creek Campground - 7 units off U.S. Highway 101 on Schooner Creek County Road.

County and/or Municipal

There are several parks and picnic areas in the Lincoln City area, but these are associated more with urban type recreation.

Private

There are 46 apartments, motels and trailer parks containing 1,996 units in the Lincoln City-Neskowin area.

E. VISITOR INFORMATION At the present time, there are no Forest Service visitor information services available in the Cascade Head Scenic-Research Area. The potential for this activity is great, however, in keeping with the purposes of the Area, the interpretation should be subtle and self-guiding. The Scenic-Research Area is well known locally and visitors are directed to the Area, primarily to the Nature Conservancy trail by local groups and individuals.

The goal of interpretation in the Scenic-Research Area would be to interpret without damaging or destroying the very features people came to see and enjoy by overuse or concentration of visitors. A point to be emphasized in all visitor contacts is the rights of private property owners in the Scenic-Research Area.

The management plan will include specifics on the opportunities for visitor information services within the Area. The most obvious need is for a visitor orientation map detailing the roads, trails, boat ramp, private lands, etc. so the Area visitor can see and enjoy the Scenic-Research Area.

F. ENVIRONMENTAL EDUCATION The Cascade Head Scenic-Research Area contains two facilities whose expressed purposes are education for all ages. These are Portland Y.W.C.A. Camp Westwind and Sitka Center, affiliated with Linfield College of McMinnville, Oregon.

For the most part, Westwind caters to "Y"

campers, outdoor schools, and various groups, who rent their facilities. These groups are educational, social, outdoor and non-profit in scope. Sitka Center is a coastal institution devoted to the study of arts and ecology. These two institutions introduce over 6,500 people to the Area annually.

Within the five surrounding counties of Lincoln, Tillamook, Benton, Yamhill and Polk, there are 14 camps of a similar nature to Westwind and Sitka Center that could impact the Cascade Head Scenic-Research Area, however, only one at the present time uses the area in their programming. Officials from two other camps said some of their rental groups have used the Area, but they did not know the purpose of the visit.

Also, within the five county area are 146 schools composed of 139 elementary and secondary schools, 1 federal school, and 6 colleges and universities. How many of these schools have used the Area is not known at this time (June 1975), however, various departments of Oregon State University, Linfield College and Oregon College of Education have all used the Area at one time or another.

The potential impacts to the Area that could be caused by increased environmental education activities, as well as by the general public, need evaluation. A careful look at where and what visiting groups are doing will help the Forest Service route visitors into parts of the Area or to locations outside the Area that will best meet their needs and the needs of the Area.

G. SOCIO-ECONOMIC Socio-economic information for the Scenic-Research Area itself is not available. The information in this section is based on data for all of Lincoln and Tillamook Counties.

The Lincoln County Resource Atlas 13/ lists the county population at 26,100 in 1972. This gives a county population density of about 26.5 persons per square mile. This source projects the county population to reach 29,800 in 1990. In 1972, about 47.4% of the people in Lincoln County lived in urban areas and the remaining 52.6% lived in rural areas.

The Tillamook County Resource Atlas 14/ lists the county population at 18,400 in 1972. This gives a county population density of about 17 persons per square mile. About 20% of these people lived in urban areas, 15% on farms and 65% were non-farm rural residents. The county's population is projected to decline to 16,300 in 1990.

Actual housing units for 1960 and 1970 with projections to 1990 are as follows: 15/

	Actual		Projected			
	1960	1970	1975	1980	1985	1990
Lincoln	10,380	12,521	12,800	13,600	14,700	15,600
Tillamook	7,830	8,034	8,050	8,225	8,800	9,300

Current employment and population figures and projections to 1990 show that Lincoln County will grow and Tillamook County will decline in terms of total population and employment. 15/ The number of housing units, as shown in the previous table, will

13/ Valde, Gary. 1973. LINCOLN COUNTY, OREGON, RESOURCE ATLAS. 74 pp. Oregon State University Extension Service, Corvallis, Oregon

14/ Ruttle, Marilyn. 1973. TILLAMOOK COUNTY, OREGON, RESOURCE ATLAS. 75 pp. Oregon State University Extension Service, Corvallis, Oregon.

15/ USDI Bonneville Power Administration. 1973. OREGON POPULATION, EMPLOYMENT AND HOUSING UNITS PROJECTED TO 1990. 84 pp.

increase in both counties during this projection period. Economists use the number of housing starts per unit of time as an economic indicator. Using this indicator, the economy of both counties should be sound.

The unemployment record for 1968 and 1971 shows that in those years, Lincoln County had a higher unemployment rate, percentage wise, than Tillamook County.16/ These figures probably reflect Lincoln County's orientation toward service to the seasonal tourist industry, whereas Tillamook County was oriented to agriculture. This unemployment record is reversed in June 1975 with Tillamook County having 13.4% unemployment and Lincoln County having 10.9% unemployment. These are seasonally adjusted figures. The local and national slowdown in the construction trades and housing starts, which reduced employment in the forest products industries in Tillamook County, is the primary cause of this reversal.

The following table compares the employment picture by county for 1960 and 1970. It also details the overall changes in the employment picture during this period. 17/, 18/

	Lincoln		
Industrial Group	1960	1970	% Change
Agriculture	465	563	21.0
Lumber and Wood Products	2,125	836	-60.6
Wholesale and Retail Trade	1,513	2,082	37.6
Business and Personal Services	838	1,476	76.1
Public Administration	305	437	43.2
Total	5,245	5,394	2.8

	Tillamook		
Industrial Group	1960	1970	% Change
Agriculture	1,002	762	-23.9
Lumber and Wood Products	1,792	1,404	-21.6
Wholesale and Retail Trade	1,010	1,116	10.4
Business and Personal Services	669	481	-28.1
Public Administration	236	289	22.4
Total	4,709	4,052	-14.0

In Lincoln County the 60.6% decline in lumber and wood products employment is partially offset by the 76.1% gain in business and personal services employment. This suggests the County is catering to a rapidly growing tourist economy. Except for public administration and wholesale and retail trade employment, the other categories of employment in Tillamook County declined for an overall loss of 14.0%. This correlates with the forecast of a declining population to 1990 made by the Bonneville Power Administration. 19/

Land managed by the Siuslaw National Forest returns money to counties from the 25% fund in lieu

16/ Valde, Gary. 1973. LINCOLN COUNTY, OREGON, RESOURCE ATLAS. 74 pp. Oregon State University Extension Service, Corvallis, Oregon

17/ Ruttle, Marilyn. 1973. TILLAMOOK COUNTY, OREGON, RESOURCE ATLAS. 75 pp. Oregon State University Extension Service, Corvallis, Oregon.

18/ USDI Bonneville Power Administration. 1973. OREGON POPULATION, EMPLOYMENT AND HOUSING UNITS PROJECTED TO 1990. 84 pp.

19/ USDI Bonneville Power Administration, 1973. OREGON POPULATION, EMPLOYMENT AND HOUSING UNITS PROJECTED TO 1990. 84 pp.

of taxes. Each county is allocated its portion of 25% of the Forest's total receipts according to the number of acres of Siuslaw National Forest land included within its boundaries for the given year. The tabulation below shows the funds allocated to Lincoln and Tillamook Counties for Fiscal Years 1970 through 1974. Any lands acquired by the Forest Service within the Cascade Head Scenic-Research Area will increase that county's allocation base.

Year	Av. Return Per Year	Lincoln	Tillamook
1970	$5.52	$ 941,452	$ 509,423
1971	5.13	874,928	473,426
1972	6.43	1,095,459	592,794
1973	9.70	1,652,472	894,241
1974	5.66	1,444,508	781,705
Total		$6,009,819	$3,251,589
5 Year Average	7.04	$1,021,763	$ 650,317

1. Lincoln County's Economy[20/] - The major components of Lincoln County's economy are lumbering, tourism, fishing and agriculture. In recent years, employment in agriculture and fishing has declined, while the tourist industry has grown. Food processing, especially in the seafood sector, provides a major portion of the seasonal employment.

Income from the sale of crops and livestock was about $2,347,000 in 1970. Livestock sales provided 64.5% of this income, and the sale of agricultural crops produced 35.5%.

About 40 firms in the logging and wood products employed over 900 people in 1972. Another 600 persons were employed by pulp and paper manufacture. From 1960 through 1970, an average of about 400 million board feet of timber was harvested annually within Lincoln County, with the Siuslaw National Forest producing 10% to 15% of the total. A large portion of this production was processed by mills within the County. Also, in 1968, about 225,450 tons of bark and wood residues were consumed as fuel or pulp and particle board operations.

The mineral, metal and related manufacturing operations employed about 78 people in the County during 1970. Most of the income from mineral processing is derived from stone, sand and gravel. However, the income level varies from year to year as construction activity fluctuates.

In 1973, the commercial fleet in Lincoln County ports landed a catch of 16,445,000 pounds worth $6,038,000 at the fisherman's level.[21/]

Lincoln County is one of the most popular tourist areas in Oregon. The federal, state and county recreational facilities for the visitor and resident are an important adjunct to those furnished by the private sector. The Lincoln County Resource Atlas has detailed figures for the retail trade and selected services industries for 1967. While specific data to update this report is not available, a conversation with the Lincoln County Planning Department indicates that the wholesale and retail trade and business and personal services sectors of the economy are continuing to grow.

Lincoln County's total assessed valuation for Fiscal Year 1974-75 for private lands within the SRA amounts to $2,056,540. Lands that are within the Devil's Lake Fire Protection District pay taxes at the rate of $13.90 per $1,000 based on 100% of true cash. Lands not covered by a fire protection district pay a rate of $13.18 per $1,000. About 75% of each tax dollar is spent for education.

20/ Valde, Gary. 1973. LINCOLN COUNTY, OREGON, RESOURCE ATLAS. 74 pp. Oregon State University Extension Service, Corvallis, Oregon.

21/ Economic Survey and Analysis of the Oregon Coastal Zone 1974

A new fish hatchery is currently under construction on the north side of the Salmon River about one-half mile upstream from Otis Junction in Lincoln County. Facilities will include four concrete rearing ponds (20'x80'), two lined rearing ponds (50'x200'), a concrete sill across the river for sufficient height to provide water to the pump facility, a utility building to contain incubation equipment, freezer, vehicle storage, an office and two residences. Fish rearing schedules are not firm at this time. The tentative schedule calls for annual production of about 150,000 fall Chinook, 800,000 Coho salmon and 40,000 steelhead. The fall Chinook and steelhead will all be released into the Salmon River, plus a portion of the Coho. This facility will provide direct economic assets to Lincoln County. The economic values generated to the commercial and recreation fishing industry will be substantial for both counties, the State of Oregon and for the nation.

2. Tillamook County's Economy[22/] - The Tillamook County economy is based upon agricultural and forestry activities. The production of cheese has earned the County's dairy farms a national reputation for excellency. Forests occupy about 90% of the County area and they provide forest resources for processing in various milling operations.

Agriculture within the County is almost totally dairy based. Most of the farms are classified as dairy, with only a few engaged in other types of livestock activity. In 1970, the total value of all crops and livestock products was estimated at $11.17 million. Livestock and livestock products made up about 97% of the total, with dairy products accounting for 80% of the total value.

22/ Ruttle, Marilyn. 1973. TILLAMOOK COUNTY, OREGON, RESOURCE ATLAS. 75 pp. Oregon State University Extension Service, Corvallis, Oregon

In 1970, almost 213 million board feet of timber was harvested in the County, with slightly over 10% produced from the Siuslaw National Forest. This production provided employment for 1,465 persons in the manufacturing of lumber and other wood products.

Mineral production varies with the degree of construction activity from year to year. The primary products are derived from sand, gravel and stone. About 22 persons were employed in mineral activities in 1970.

In Tillamook County, the land is assessed at 100% of true cash value. The total assessed value of private lands within the Scenic-Research Area is $2,325,010. All taxes are paid at the rate of $11.75 per $1,000. About 82% of each tax dollar supports education.

H. RESEARCH-SCIENTIFIC Various portions of the Cascade Head Scenic-Research Area have been studied by the research-scientific community in varying intensities for many years. The estuary itself has been studied by a variety of state agencies interested in water, fish, wildlife and estuarian values. Various colleges and universities have used this Area for on-going research programs, particularly at the graduate level. The northern one-third of the Area makes up the western part of the Cascade Head Experimental Forest. This Experimental Forest was established in 1934 with a research mission designed to increase timber production by determination of basic silvicultural practices for harvest, regeneration, and culture of western hemlock-Sitka spruce forests, and to provide a sound basis for coordination of timber production with other objectives of multiple use management of forest land.

No attempt will be made in this report to summarize all research activities that have been conducted or are on-going within the Scenic-Research

Area. There have been over 60 research reports published on the work done within the Cascade Head Experimental Forest. Numerous scientific reports have been published by state agencies concerned with this Area, principally the Fish and Wildlife Commission, the Oregon Coastal Conservation and Development Commission and the Oregon State University Extension Service. Reports and theses applicable to this Area are available at university libraries and graduate schools. Many of these documents are on hand at the Planning Team office in Hebo. Much of the information from these studies is included as data in other parts of this volume.

Bob Ruth, a scientist with the Pacific Northwest Forest and Range Experiment Station headquartered at Corvallis, Oregon, has put together a proposed research program for the Area. A research program will be an integral part of the management plan for the Area that will complete this planning effort. The Cascade Head Scenic-Research Area presents an ideal opportunity for multiple-use research. The Area has the following advantages:

1. All major uses of forest land and resource types are present:
   - High productive timber land.
   - A coastal estuary, associated wetlands and tributary system.
   - Residential use.
   - Recreational use.
   - Ocean headlands.
   - Coastline and sand dune-spit areas.
   - Grazing.

2. The Scenic-Research Area is typical of a much broader area along the Pacific Coast. Research results will have wide application.

3. Research activities and results may be readily combined with the educational objectives of Public Law 93-535.

4. Research-educational activities and residential and recreational use may be integrated to accomplish an objective stated in the Act "...promote a more sensitive relationship between man and his adjacent environment..."

The overall mission and goals of the research program should be to:

Provide the knowledge, technology, and alternatives for present and future protection, management, and use of the Cascade Head Scenic-Research Area and similar areas. Within this overall mission, conduct and stimulate research toward the following goals:

1. Providing technology for inventory, protection and integrated use of the resources of the Area.

2. Development and evaluation of alternative methods and levels of resource management.

3. Achievement of optimum sustained resource productivity and integrated use consistent with maintaining a high quality environment.

The scope and potential of an active research-scientific program within the Scenic-Research Area will be detailed in the management plan. The potential for research and scientific study within the Area is almost unlimited.

I. LAW ENFORCEMENT The Oregon State Police Department has responsibilities for traffic regulations on state highways, game regulations, beach rules, and boating regulations within the Cascade Head Scenic-Research Area. Lincoln and Tillamook Counties have jurisdiction over some boating regulations, civil law, traffic regulations on county roads and search and rescue operations within the Area.

The Salmon River is classed, by the Coast Guard, as a "navigable" river from its mouth to the Highway 101 bridge. As a navigable body of water, the Coast Guard has responsibilities for boating safety and search and rescue on the water surface. They also have responsibility of initiating and following up actions in case of oil or chemical spills in or adjacent to navigable waters. They have law enforcement authority for all crimes committed on a navigable body of water, but generally they turn that responsibility over to local agencies whenever possible. The Depoe Bay Coast Guard Station has administrative responsibility for the Cascade Head Area.

The West Oregon Fire Protection Agency has law enforcement responsibility in enforcing Oregon fire and forest practices Act laws on all non-Forest Service land. The Forest Service has responsibility for enforcing Federal laws and regulations on National Forest land. The State of Oregon has delegated authority to the Forest Service to enforce fire laws on National Forest land. The Forest Service uses this delegation only when it better fits the individual situation. The Forest Service assists County Sherrifs and the Coast Guard in search and rescue operations when requested to do so.

SECTION 3 - RESPONSE UNITS

A. DEFINITION Response units are homogeneous areas of land. They are similar in soil, geologic, hydrologic and vegetative characteristics. Because of this physical similarity, lands within a response unit will react or respond to treatment, management or use in the same manner regardless of location.

During this inventory effort, all lands within the Cascade Head Scenic-Research Area were placed in one of 57 response units. Individual response units are generally five acres or larger in size. The response units are delineated on a four inch to the mile aerial photo included in Appendix II of this report.

Written descriptions of each of the 57 response units are included in Part C of this section. These descriptions provide specifics of the soil, geologic, hydrologic and vegetative characteristics, as well as information on wildlife, slope, climate and landform. This description will aid in locating the particular response unit on the ground and serves as a basis for determining its suitability for various uses and activities. Any use or activity that substantially changes the vegetative cover of the Area will change the response unit that Area is placed in. The following is a list of the 57 response units, their mapping symbol and the page number of the description.

Number	Response Unit Name	Symbol	Page No.
1.	Beach Sand - Ocean	BS-O	36
2.	Beach Sand - Estuary	BS-E	38
3.	River Channel	R	40
4.	Tidal Flats - (Algae-Eel Grass)	TF-AE	42
5.	Tidal Flats/Sand Dune Complex	TS	44
6.	Marsh Land - Salt Marsh	ML-S	46
7.	Marsh Land - Diked Marsh	ML-DM	48
8.	Lower Flood Plain - Shrub	LFP-S	50
9.	Lower Flood Plain - Diked Marsh	LFP-DM	52
10.	Lower Flood Plain - Grass	LFP-G	54
11.	Lower Flood Plain - Conifer Deciduous	LFP-CD	56
12.	Upper Flood Plain - Salt Marsh	UFP-SM	58
13.	Upper Flood Plain - Diked Marsh	UFP-DM	60
14.	Upper Flood Plain - Grass	UFP-G	62
15.	Upper Flood Plain - Shrub	UFP-S	64
16.	Upper Flood Plain - Conifer Deciduous	UFP-CD	66
17.	Active Dune - Beach Grass	AD-BG	68
18.	Stabilized Dune - Conifer Deciduous	SD-CD	70
19.	Elevated Alluvial Terrace - Grass	EAT-G	72
20.	Elevated Alluvial Terrace - Shrub	EAT-S	74
21.	Elevated Alluvial Terrace - Deciduous	EAT-D	76
22.	Active Landslide	ALS-D	78
23.	Landslide Deposit - Grass	LSD-G	80
24.	Landslide Deposit - Shrub	LSD-S	82
25.	Landslide Deposit - Shrub - 1	LSD-S-1	84
26.	Landslide Deposit - Deciduous	LSD-D	86
27.	Landslide Deposit - Conifer Deciduous	LSD-CD	88
28.	Landslide Deposit - Conifer - 1	LSD-C-1	90
29.	Landslide Deposit - Conifer	LSD-C	92
30.	Sedimentary Residual Heavy Clay - Grass	SRHC-G	94
31.	Sedimentary Residual Heavy Clay - Shrub	SRHC-S	96
32.	Sedimentary Residual Heavy Clay - Deciduous	SRHC-D	98
33.	Sedimentary Residual Heavy Clay - Conifer Deciduous	SRHC-CD	100
34.	Sedimentary Residual Heavy Clay - Conifer	SRHC-C	102
35.	Sedimentary Residual Light Clay - Grass	SRLC-G	104
36.	Sedimentary Residual Light Clay - Shrub	SRLC-S	106
37.	Sedimentary Residual Light Clay - Shrub - 1	SRLC-S-1	108
38.	Sedimentary Residual Light Clay - Deciduous	SRLC-D	110
39.	Sedimentary Residual Light Clay - Conifer Deciduous	SRLC-CD	112
40.	Sedimentary Residual Light Clay - Conifer - 1	SRLC-C-1	114

B. LAND SUITABILITY Each response unit was evaluated for land suitability. Land suitability is defined as the ability of the land to sustain a use or activity. The determination of land suitability was done in an objective manner and many of the reasons were documented. To aid in the analysis, land suitability was divided into two parts: land sensitivity and land capability.

1. Land Sensitivity Land sensitivity is defined as the ability of the land to withstand a use or activity without significant deterioration of the land, water (water quality), or associated vegetation. By the very nature of certain uses or activities, complete vegetative removal is necessary. Ratings for such uses and activities would normally be high sensitivity. However, for evaluation purposes, ratings for those uses and activities which completely removed the vegetation reflect only sensitivity as it relates to soils and water quality since removal of the vegetation results in a change in the response unit that area fits into. Each existing or potential use of the land was evaluated for each response unit for which the use applied. (N.A. indicates that the use or activity was not applicable for that response unit.) This evaluation was done by the Cascade Head Planning Team leader, assistant leader, and the team geologist, soils scientist, hydrologist, wildlife biologist and recreation specialist. Values of high, medium or low sensitivity were assigned for each use or activity on each response unit. High sensitivity means that it is predicted that the use or activity will highly impact the site, causing serious damage or alteration. On the other end of the scale, low sensitivity means that it is predicted that the use or activity will have little or no effect on the land itself. If it is necessary to make large modifications to the land to allow a use or activity to occur without damage to the land, the sensitivity rating will probably be high. (The response unit would actually be changed because of the use or activity.) All ratings were agreed to by each evaluating team member.

2. Land Capability Land capability is defined as the ability of the land and associated vegetation to successfully furnish the needed requirements or ingredients for a use or activity. For example, a brush covered response unit would rate low for cross country hiking, whereas a grassy knob at the end of Cascade Head would rate high. A second example of land capability would be that of house construction. A response unit would not be considered highly capable of successfully furnishing the needed requirements for house construction if it were predicted that after six months the foundation would settle, breaking water and sewer lines.

A rating of high, medium or low land capability was assigned to each use or activity on each response unit to which it applied. This rating was given without regard to what the use or activity would do to the land itself, as this rating was covered under land sensitivity.

If it is necessary to make large modifications to the land to allow a use or activity to occur, the land capability rating will be low for that use or activity. A high land capability rating indicates that a use or activity can reasonably occur on the land with only small modification: a low cabibility rating indicates that it will be necessary to make large site modification to allow the use to occur.

The land suitability rating was achieved by combining land sensitivity and land capability. For example, a response unit that is highly capable of furnishing the needed requirements for use and has low sensitivity to that use or activity rated a high suitability. On the other end of the spectrum, a response unit which has a low capability for a use, and would be highly sensitive to that use, were it to occur on that response unit, rated a low suitability.

Suitability ratings were often weighted to reflect the prime limiting factor - either capability

or sensitivity.

A low land suitability rating does not mean that a use or activity cannot occur on a site, but is intended to indicate severity of site modification or manipulation needed to properly accomodate that use or activity.

C. DESCRIPTIONS OF RESPONSE UNITS AND ANALYSIS OF USES AND ACTIVITIES ON THAT RESPONSE UNIT The following pages contain the written descriptions of each of the 57 individual response units found in the Cascade Head Scenic-Research Area. Accompanying each of these descriptions is a form that rates 28 uses or activities for land sensitivity, capability and suitability. These forms also rate the tolerance levels for these response units to maintain the visual and wildlife values, if these uses and activities occur.

Wildlife Tolerance Rating The degree of impact that a proposed facility or activity would have on the existing wildlife species inhabiting each response unit was identified using a tolerance rating. Tolerance ratings range from 1 (no significant effect on wildlife anticipated) to 5 (a significant detrimental effect on wildlife). The length of time needed for the response unit to return to its original condition is not indicated, only immediate impact on wildlife was rated.

Rating	Description
1. Very High Tolerance	- little or no temporary change in habitat - little or no harassment of wildlife is expected
2. High Tolerance	- some temporary change in habitat, some temporary harassment of wildlife is expected, but species continue to use the Area
3. Moderate Tolerance	- moderate amount of temporary change in habitat or small amount of permanent change is expected - some temporary harassment of wildlife is expected causing species to avoid the Area for short periods of time
4. Low Tolerance	- expected large amount of temporary change or a moderate amount of permanent change in habitat - harassment causes species to abandon Area for long periods of time, some nesting failure results
5. Very Low Tolerance	- large amounts of permanent change in habitat - expected harassment causes species to abandon Area or results in nesting failure

Visual Tolerance Level Rating The management direction given by P.L. 93-535 for each subarea indicates the need to protect and maintain the scenic values. To aid in the accomplishment of this management direction, each use and activity was given a subjective rating for visual tolerance level for each response unit. The reader should consider:

1. The rating is on-site: that is, the viewer's position is adjacent to the use or activity. If the viewer's position changes, the rating may also change.

2. The rating reflects the time when use or activity has the greatest impact on visual quality and does not consider the amount of time it takes for the response unit to recover to its original condition.

A rating of Low (L) indicates that the use or activity will have a low visual impact on the response unit. The response unit is capable of absorbing the use or activity without significant deterioration of the visual quality.

A rating of High (H) indicates that the use or activity will highly impact the visual quality of the response unit. The response unit is not capable of absorbing the use or activity and that there will be significant damage to the response unit.

A rating of Medium (M) indicates impacts will fall between high and low

D. USES AND ACTIVITIES WHICH WERE EVALUATED The list of uses and activities which are evaluated should not be considered in all-inclusive list, nor does it include all uses and activities which were "grandfathered" in by the law. Under the provisions of the law, these "grandfathered" uses and activities can be replaced in kind if they are destroyed.

Appendix VI contains specific definitions for the 28 uses and activities that were evaluated. These specific definitions were needed so that the team members doing the evaluation would have a common understanding of the type of impacts to be considered. In actual practice, each individual proposal will have to be evaluated on its own merits.

1. Beach Sand-Ocean - (BS-0) - This response unit is found in only three places; on the ocean side of the Salmon River sand spit, a small secluded beach south of the Salmon River and at the north end of Roads End. Typically, it is located between the foredune and the ocean and consists of mixed sand. This unit is strongly influenced by the ocean, which deposits sand on the beach, and the on-shore winds, which move the sand inland. It is flat to gently sloping, and moist due to wave and tidal influence. The water table is 0' to 3' and the area is usually flooded by daily tidal action. This response unit has no vegetative cover.

The beach is used by 49 species of wildlife, primarily birds. Western gulls, sanderlings, crows, and Western sandpipers are commonly observed on the beach.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	L	H	H	1	L	
10.	Gathering Forest Products	NA					
11.	*Underground Utilities	NA					
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	H	H	1	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	L	H	H	1/2	L	
16.	Off Road Vehicles	L	H	H	1/2	L	
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	NA					
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	NA					
26.	Trail	NA					
27.	Herbicides	NA					
28.	*Land Fills	NA					

* Sensitivity Rating Reflects Only Soil Conditions.

BS-0
REASONS

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15. Concentrated wildlife harassment - June-October
16.
17.
18.
19.
20.
21.
22.
23.
24.
25.
26.
27.
28.

Vegetative Removal Results in a Change of the Response Units.

2. Beach Sand - Estuary - (BS-E) - This response unit is found on the estuary side of the Salmon River sand spit, and is located between the river and the older stabilized dune of the spit. It is flat to gently sloping and moist due to wave and tidal action. The sand on the estuary beach is primarily deposited by eddy currents within the river. However, some of the sand is a result of wind scour action on the sand spit. This response unit is subject to daily tidal flooding and seasonal flooding and water erosion. However, because of deposition of sand and constant water action, the unit generally retains its original shape. The water table is 0' to 3' and the area is flooded by daily tidal action. This response unit has no vegetative cover.

The same 49 species of wildlife that frequent the ocean beach also are found in this habitat. The killdeer, California gull, dunlin and least sandpiper are commonly present on ocean and estuary beaches.

LAND

	ACTIVITY OR USE	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	H	L	L	4	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	H	L	L	1	L
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	NA				
11.	*Underground Utilities	L	L	L	1	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	H	H	1	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	L	H	H	1/2	L
16.	Off Road Vehicles	L	M	M	1/2	L
17.	*Parking Lot	NA				
18.	*Gravelled Road	NA				
19.	*Paved Road	NA				
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	L	M	M	1	L
22.	Stream Channelization Facilities	H	H	L	5	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	NA				
26.	Trail	NA				
27.	Herbicides	NA				
28.	*Land Fills	H	L	L	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

BS-E

REASONS

1.	
2.	Diversion of channel flow direction-channel scouring-channel deposition-destroys bentic animals
3.	
4.	
5.	
6.	
7.	
8.	Destroys existing animal community-river will deposit material in dredged area
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	Complete physical alteration of response unit-destruction of existing wildlife habitat
23.	
24.	
25.	
26.	
27.	
28.	Water quality degradation from sediment-destroys bentic animals and alters wildlife habitat

Vegetation Removal Results in a Change of the Response Units.

3. River Channel - (R) - This response unit is the present Salmon River channel plus primary tributary channels, and is part of the estuary system. It includes all the area of channelized fresh and brackish water at mean low tide. The only forms of vegetation found in this response unit are phytoplankton and eel grass.

The phytoplankton, eeel grass, zooplankton and numerous invertebrates which are found in the water or on the bottom of the channel are the major food source for 181 wildlife species and at least 51 fish species that are found in the estuary system. Waterfowl, shore birds, anadromous fish and ocean-bay fish use the channel for resting, feeding or spawning. Great blue herons, belted kingfishers, American widgen ducks, and harbor seals are commonly seen and cutthroat trout and starry flounder are commonly caught in the river channel.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	H	H	M	3	H	
3.	Motorized Boating	L	M	M	2/3	L	
4.	Non-motorized Boating	L	H	H	1/2	L	
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	NA					
7.	Dike Maintenance	NA					
8.	Dredging	H	L	L	3	L	
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	NA					
11.	*Underground Utilities	L	L	L	2	L	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	NA					
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	NA					
16.	Off Road Vehicles	NA					
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	M	L	L	2	L	
22.	Stream Channelization Facilities	H	H	L	5	H	
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	NA					
26.	Trail	NA					
27.	Herbicides	NA					
28.	*Land Fills	H	L	L	5	H	

*Sensitivity Rating Reflects Only Soil Conditions.

R	REASONS
1.	
2.	Causes channel scouring and deposition which affects neighboring response units-destroys part of bentic community
3.	Harassment of wildlife yearround, but most impact November-April
4.	Harassment of wildlife yearround, but most impact November through April
5.	
6.	
7.	
8.	Diversion of channel flow affects adjacent units-change in water salinity-temporarily destroys bentic community
9.	
10.	
11.	Channel scour may uncover lines
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	Channel scour may uncover lines
22.	Diversion of channel flow may affect adjacent response units-permanent alteration of wildlife habitat
23.	
24.	
25.	
26.	
27.	
28.	Diversion of channel flow-complete alteration of response unit-destroys bentic animals- eliminates habitat

Vegetation Removal Results in a Change of the Response Units.

4. Tidal Flats - (Algae-Eel Grass) - (TF-AE) - Continually saturated and frequently flooded, this response unit is composed of tidal mud and peat soils. The soils are deep silty clay loam and sands with variable amounts of organic debris, usually peat or organic muck. This response unit occurs on low tidelands and inlets which are formed by deposition of mixed alluvium into bays and river valleys that have been drowned by the rise of sea level since the Ice Age. These soils are very high in soluble salts, limiting types of vegetation that can grow. These areas are typically described as Tidal Flats by the Soil Conservation Service. Algae and eel grass form the only vegetation for this response unit.

Numerous species of invertebrate organisms and crustaceans, such as ghost shrimp, are a primary food source for at least 90 species of wildlife. Whimbrels, semi-palamated plovers and short-billed Dowitchers are a few of the many species seasonally common to tidal flats. Most of the wildlife species that use the river channel and salt marsh also use the tidal flats. When covered with tidal water, fish such as the starry flounder, move to the tide flats to feed.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	H	L	L	5	H
3.	Motorized Boating	H	L	L	2/4	L
4.	Non-motorized Boating	L	M	M	1/2	L
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	NA				
7.	Dike Maintenance	H	L	L	2	M
8.	Dredging	H	L	L	3	M
9.	Bank or Shoreline Fishing	L	L	L	1	L
10.	Gathering Forest Products	NA				
11.	*Underground Utilities	L	L	L	2	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	2/5	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2/5	M
16.	Off Road Vehicles	H	L	L	5/5	M
17.	*Parking Lot	NA				
18.	*Gravelled Road	NA				
19.	*Paved Road	NA				
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	L	L	L	2	L
22.	Stream Channelization Facilities	H	H	L	4	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	NA				
26.	Trail	NA				
27.	Herbicides	NA				
28.	*Land Fills	H	L	L	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

TF-AE

REASONS

1.	
2.	Diversion of channel flow causes scour and deposition-shallow water-permanently removes part of bentic community
3.	Fragile plant community-shallow water-prop churns up tidal flat and destroys part of bentic community
4.	
5.	
6.	
7.	Interference with surface and subsurface water movement-probable water quality degradation
8.	Shore-line erosion-channel scour and deposition-diversion of channel flow-destruction of bentic community
9.	Mud and shallow water for part of the day
10.	
11.	Difficult and expensive construction
12.	
13.	Muddy and often covered with water-heavy harassment of wildlife in winter-some destruction of bentic community
14.	
15.	Muddy and often covered with water-heavy harassment of wildlife in winter-some destruction of bentic community
16.	Vehicles will bog down-heavy harassment of wildlife all year and destruction of bentic community
17.	
18.	
19.	
20.	
21.	
22.	Permanent destruction of response unit-diversion of channel direction affects adjacent response units-
23.	
24.	
25.	
26.	
27.	
28.	Permanent destruction of response unit-water quality degradation from sediment-permanent destruction of bentic comm.

Vegetation Removal Results in a Change of the Response Units.

5. Tidal Flat/Sand Dune Complex (T/S) - This response unit consists of an intimate mixture of elevated dunes and low-lying tidal flats too complex to be mapped separately. It occurs where tidal inflow and outflow have carved intricate water passages through active dunes. The result is a landscape of dissected duneland sitting above flat, interfingered tideland that is periodically flooded. Characteristics, qualities and interpretations of both Tidal Flat and Active Dune response units must be referred to to gain detailed information on this response unit.

Wind and water erosion hazard of this area ranges from low to high. The water table ranges from 0 to 3 feet, and portions of the response unit are subject to daily tidal flooding. A combination of grasses, sedges and rushes are found on portions of this response unit, with the dominant grass species being European beachgrass. Occasional scattered shrubs are also found. Portions of the response unit are unvegetated.

At least 90 species of wildlife use the unvegetated response unit, 124 species use the salt marsh, and 74 species use the beach grass plant community. The majority of the animals using salt marsh and tidal flats are the same species. The marsh hawk and Townsends vole commonly use the salt marsh. Western sandpiper and whimbrels usually may be seen on tidal flats. Savannah sparrows and deermice are evident in the beach grass plant community.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	H	L	L	5	H	
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	H	L	L	3	H	
6.	Backpack Camping	H	H	M	1/3	L	
7.	Dike Maintenance	NA					
8.	Dredging	H	M	L	3	H	
9.	Bank or Shoreline Fishing	M	L	L	1	L	
10.	Gathering Forest Products	NA					
11.	*Underground Utilities	M	L	L	2	L	
12.	Grazing	H	L	L	3	L	
13.	Hiking (Low Concentrations)	H	H	L	2/4	L	
14.	*Residential Housing	H	L	L	5	H	
15.	Concentrated Foot Traffic	H	H	L	4	M	
16.	Off Road Vehicles	H	H	L	5	M	
17.	*Parking Lot	H	L	L	5	M	
18.	*Gravelled Road	H	L	L	5	M	
19.	*Paved Road	H	L	L	5	M	
20.	*Septic Tank & Drainfield	H	L	L	5	M	
21.	*Sewer Lines	H	L	L	2	M	
22.	Stream Channelization Facilities	H	H	L	5	M	
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	M	L	L	2	H	
26.	Trail	L	H	H	2/4	L	
27.	Herbicides	NA					
28.	*Land Fills	H	M	L	5	H	

*Sensitivity Rating Reflects Only Soil Conditions.

T/S REASONS
1.
2. Highly erodible soils, interfers with tidal movement, water too shallow, destruction of wildlife habitat
3.
4.
5. Low bearing strength of soil and high water table interfers with tidal movement
6. Foot traffic will destroy plant community - wildlife harassment
7.
8. Sandy soil will slough into excavation-destruction of wildlife habitat
9. Foot traffic will destroy plan community-water too shallow for good fishing
10.
11. Difficult to construct
12. Will cause wind and water erosion-grass of low quality for grazing
13. Fragile plant community-bank sloughing-wind or water erosion-wildlife harassment
14. High water table-subject to daily or annual flooding-wildlife harassment
15. Bank sloughing-fragile plant community-wind and water erosion
16. Surface erosion-fragile plant community-destruction of wildlife habitat
17. Fragile plant community-surface erosion-high ground water-subject to flooding-destruction of wildlife habitat
18. Interference with surface and subsurface water movement, destruction of wildlife habitat
19. Interference with surface and subsurface water movement, destruction of wildlife habitat
20. Possible water quality degradation-contamination of shell fish-high ground water-scouring and flooding
21. Possible water quality contamination-fragile plant community-some permanent destruction of wildlife habitat
22. Complete alteration of response unit-complete change of wildlife habitat
23.
24.
25. Possible water quality degradation-daily or annual flooding-boyancy hazard due to high ground water
26. Some damage to the fragile plant community
27.
28. Complete physical alteration of plant community

Vegetation Removal Results in a Change of the Response Units.

6. Marsh Land - Salt Marsh - (ML-S) - This response unit is generally found adjacent to the river or tidal flats. The soils are deep silty clay loam and sand with variable amounts of organic debris, usually peat or organic muck. This unit was formed by deposition of mixed alluvium and organic debris into the estuary. This response unit represents the only relatively unaltered marshes remaining in the area. Six types of salt marshes were identified in the Salmon River estuary but the variations between the six were too small to detail as separate response units. The six marsh types are a product of the different stages of plant development, the substrata of sand or silt, and the amount of salt/fresh water intrusion. The water table of this response unit varies from 0 to 3 feet. Parts of the unit are subject to daily tidal flooding and the entire subarea is subject to seasonal flooding. Salt grasses, rushes and sedges are common vegetative types in this area.

The response unit is highly dissected by small tidal inlet channels which move nutrients from the productive salt marsh to the river/ocean.

Salt marshes are used by 124 species of wildlife and is the preferred habitat of 57 species. Green-winged teal, American bittern, marsh hawk, common garter snake, mink, Townsend vole and the short-eared owl are commonly found in salt marshes.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE LEVEL CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	H	L	L	5	M
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	L	L	3	H
6.	Backpack Camping	L	M	M	1/3	L
7.	Dike Maintenance	L	H	H	2	M
8.	Dredging	H	H	L	5	H
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	M	M	M	2	L
12.	Grazing	L	L	L	5	L
13.	Hiking (Low Concentrations)	L	M	M	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2/4	M
16.	Off Road Vehicles	H	M	L	2/4	M
17.	*Parking Lot	L	L	L	3	M
18.	*Gravelled Road	M	L	L	5	M
19.	*Paved Road	H	L	L	5	M
20.	*Septic Tank & Drainfield	H	L	L	5	M
21.	*Sewer Lines	M	L	L	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	H	L	L	5	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	L	L	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

ML-S

REASONS

1.	Low quality product-removal of organic matter lowers wildlife productivity in estuary and this response unit
2.	
3.	
4.	
5.	Subject to periodic flooding-permanent removal of wildlife habitat
6.	Wildlife harassment
7.	
8.	Susceptible to bank sloughing-would lower water table-reduction of wildlife habitat
9.	
10.	
11.	
12.	
13.	Hidden tidal channels-harassment of wildlife
14.	
15.	Hidden tidal channels-harassment of wildlife
16.	
17.	Soil has low bearing strength-will destroy productivity of salt marsh for wildlife
18.	Soil has low bearing strength-will destroy productivity of salt marsh for wildlife
19.	Soil has low bearing strength-will destroy productivity of salt marsh for wildlife
20.	Possible water quality degradation
21.	Soil has low bearing strength-salt water corrosion
22.	
23.	
24.	
25.	Annual flooding will cause contamination of shell fish and water
26.	
27.	Destruction of salt marsh plant community-will affect invertebrates
28.	Possible water quality degradation-permanent removal of productivity for wildlife

Vegetation Removal Results in a Change of the Response Units.

7. Marsh Land - Diked Marsh - (ML-D) - This response unit is generally found adjacent to the river or tidal flats. The soils are deep silty clay loam and sand with variable amounts of organic debris, usually peat or organic muck. This unit was formed by deposition of mixed alluvium and organic debris into the estuary. This unit was once a salt marsh. It has been diked and drained. The dikes have tide gates which prevent salt water intrusion. Because of diking, the marsh has been invaded by grasses commonly found on the flood plain. Both rushes and sedges are still very evident in diked marshes because of the high water table. Old tidal channels frequently contain fresh water cattails, rushes, sedges and pond weeds. Occasional shrubs and trees are found in the unit. The edges of the dikes which are subject to tidal action are covered by various salt marsh plants.

The water table of this response unit is 0 to 3 feet from the surface. Portions of the response unit are seasonally flooded when the high water of the river prevents the tide gates from opening, trapping water inside the dike.

Diked salt marshes are used by 133 species of wildlife and is the preferred habitat of 50 animals. Many of the species that use grasslands are also found in salt marshes. The vagrant shrew, American goldfinch, brown-headed cowbird, sparrow hawk, northwestern garter snake, and striped skunk are commonly present. The diked tidal channels and the fresh water vegetation in them are used by waterfowl and shorebirds.

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	VISUAL TOLERANCE LEVEL	WILDLIFE TOLERANCE LEVEL
1.	*Agriculture Crops	M	M	M	5	L
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	L	H	H	1	M
8.	Dredging	M	H	M	3	H
9.	Bank or Shoreline Fishing	L	M	M	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	1	M
12.	Grazing	L	H	H	?	L
13.	Hiking (Low Concentrations)	L	M	M	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2/4	M
16.	Off Road Vehicles	M	M	M	3	M
17.	*Parking Lot	L	L	L	1	M
18.	*Gravelled Road	L	M	M	2	M
19.	*Paved Road	L	L	L	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	M	M	M	2	L
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	L	L	5	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	L	M	L	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

ML-D

REASONS

1.	Wildlife harassment
2.	
3.	
4.	
5.	Soil has low bearing capacity-removal of some wildlife habitat
6.	
7.	
8.	Removal of some fresh water wildlife habitat
9.	
10.	
11.	Underground salt water may be corrosive
12.	
13.	Wildlife harassment
14.	
15.	Wildlife harassment
16.	Destruction of vegetation and wildlife harassment
17.	Subject to annual flooding-soil has low bearing capacity-destruction of fresh water wildlife habitat
18.	Harassment and destruction of wildlife habitat
19.	Wildlife harassment
20.	Water quality degradation-possible contamination of the fresh water wildlife habitat
21.	Low bearing strength underground, salt water is corrosive to pipes
22.	
23.	
24.	
25.	Vaults will become boyant in high ground water-contamination of wildlife habitat during flood conditions
26.	
27.	Water quality degradation-contamination of wildlife habitat
28.	Elimination of some wildlife habitat, particularly in marshy areas

Vegetation Removal Results in a Change of the Response Units.

8. Lower Flood Plain - Shrub - (LFP-S) - This response unit consists of deep, mixed alluvium occupying the lowest portion of the present river flood plains. The ground surface is generally flat to gently depressional. Due to the proximity to tidal flats and relatively similar elevation, this area may be affected by salt water at high tides, and is flooded annually by high stream flow. Ground water may be brackish and at or near the ground surface. The soils are silty clay loam to silty clay. Soils of the Brenner and Nestucca Soil Series have been described on these areas by the Soil Conservation Service. The predominant plant species of this response unit is a mixture of shrub types (Elderberry, huckleberry and blackberry), a scattering of small alder and some areas of grass.

This shrub community is used by 126 species of wildlife. It is the preferred habitat of 69 species. Brush rabbits, song sparrows, bobcats, Northern alligator lizards and rufous-sided towhees are common in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	M	M	5	M
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	L	L	3	H
6.	Backpack Camping	L	L	L	1/3	L
7.	Dike Maintenance	NA				
8.	Dredging	H	M	L	5	H
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	M	M	2	L
12.	Grazing	M	L	L	5	L
13.	Hiking (Low Concentrations)	L	M	M	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	M	M	2/4	M
16.	Off Road Vehicles	H	M	L	2/4	M
17.	*Parking Lot	L	L	L	3	M
18.	*Gravelled Road	L	L	L	5	M
19.	*Paved Road	L	L	L	5	M
20.	*Septic Tank & Drainfield	H	L	L	5	M
21.	*Sewer Lines	L	M	M	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	H	L	L	5	M
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	H	L	L	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

LFP-S

REASONS

1.	Organic material removed from estuary and wildlife habitat
2.	
3.	
4.	
5.	Subject to annual flooding-removal of some wildlife productivity and habitat
6.	Minor wildlife harassment
7.	
8.	Would lower water table of the unit-removal of some wildlife habitat and edge effect
9.	
10.	
11.	Possible salt water corrosion of utilities
12.	Organic material removed from productivity in the estuary
13.	Wildlife harassment
14.	
15.	Vegetation concentrate foot traffic-wildlife harassment
16.	Compaction of soil results in plant community reduction-wildlife harassment and damage to tidal channels
17.	Partially destroys wildlife habitat
18.	Soil has low bearing strength-wildlife habitat destruction
19.	Soil has low bearing strength-destruction of wildlife habitat
20.	Possible water quality degradation-possible contamination of wildlife habitat
21.	Possible corrosion of lines by salt water
22.	
23.	
24.	
25.	Annual flooding will cause contamination of wildlife habitat-high water table may cause vault to become boyant
26.	Soil has low bearing strength-high water table
27.	High water table and annual flooding may cause water quality degradation which may effect inverterbrates
28.	Permanent removal of wildlife habitat

Vegetation Removal Results in a Change of the Response Units.

9. Lower Flood Plain - Diked Marsh - (LFP-DM) - This response unit consists of deep, mixed alluvium occupying the lowest portion of the present river flood plains. The ground surface is generally flat to gently depressional. Ground water is brackish and at or near the ground surface. The soils are silty clay loam to silty clay. Soils of the Brenner and Nestucca Soil Series have been described on these areas by the Soil Conservation Service. The vegetation of this response unit is a mixture of fresh water plants such as sedges, rushes, skunk cabbage, hair grass and bent grass. Occasional trees and shrubs also occur in this unit.

Although annual flooding occurs in this response unit, it differs from other lower flood plain response units in that the dike causes internal flooding from runoff within the dike, rather than external flooding caused by the river or tides.

Diked marshes are used by 133 species of wildlife and are the preferred habitat of 50 animals. Many of the species that occupy the grasslands are also found in diked marshes. The vagrant shrew, American goldfinch, sparrow hawk, and garter snake are commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	M	M	5	L
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	L	L	2	H
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	L	H	H	1	M
8.	Dredging	H	M	L	3	H
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	1	L
12.	Grazing	L	M	M	?	L
13.	Hiking (Low Concentrations)	L	M	M	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	H	H	M	2/4	M
16.	Off Road Vehicles	H	M	L	3	M
17.	*Parking Lot	L	L	L	1	M
18.	*Gravelled Road	L	L	L	2	M
19.	*Paved Road	L	L	L	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	L	M	M	2	L
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	H	L	L	5	H
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	L	H	H	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

LFP-DM

REASONS

1.	Partial destruction of wildlife habitat and wildlife harassment
2.	
3.	
4.	
5.	Annual flooding-removes portion of fresh water wildlife habitat
6.	
7.	
8.	Destroys fresh water wildlife habitat
9.	
10.	
11.	If salt water is present, it will corrode underground utilities
12.	
13.	Some wildlife harassment
14.	
15.	Surface water is present-some wildlife harassment
16.	Compaction by vehicles results in plant community reduction-wildlife harassment-possible destruction freshwater msh.
17.	Destruction of freshwater marsh habitat
18.	Soil has low bearing strength-destruction of freshwater marsh wildlife habitat
19.	Soil has low bearing strength-destruction of freshwater marsh wildlife habitat
20.	Possible water quality degradation, both surface and subsurface-contamination of fresh water wildlife habitat
21.	
22.	
23.	
24.	
25.	High water table-possible contamination of surface and subsurface water by annual flooding-contamination of habitats
26.	High water table would affect foot traffic
27.	Highwater table and annual flooding may cause contamination of estuary and wildlife habitats
28.	Destruction of some portion of wildlife habitat

Vegetation Removal Results in a Change of the Response Units.

10. Lower Flood Plain - Grass - (LFP-G) - This response unit consists of deep, mixed alluvium occupying the lowest portion of the present river flood plains. The ground surface is generally flat to gently depressional. This response unit is flooded annually be high stream flow. Ground water is brackish and at or near the ground surface. The soils are silty clay loam to silty clay. Soils of the Brenner and Nestucca Soil Series have been described on these areas by the Soil Conservation Service.

The plant species within this response unit are primarily flood plain species, such as sedges, rushes, skunk cabbage, hair grass and bent grass. Domestic exotic grasses are also present as a result of pasture improvement. Many other water-tolerant plants and upland grasses can be found. Scattered shrubs and alder trees are also present.

Flood plain grass areas are used by 130 species of wildlife and it is the preferred habitat of 41 of these species. The Townsend mole, Townsend vole, striped skunk, red-tailed hawk, and marsh hawk commonly use this habitat.

	LAND ACTIVITY OR USE	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	M	M	3	L
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	L	L	2	H
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	H	M	L	3	H
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	2	L
12.	Grazing	L	M	M	1	L
13.	Hiking (Low Concentrations)	L	H	H	1/3	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	H	H	M	1/3	M
16.	Off Road Vehicles	H	M	L	3/5	M
17.	*Parking Lot	L	L	L	2	M
18.	*Gravelled Road	L	L	L	3	M
19.	*Paved Road	L	L	L	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	L	M	M	2	L
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	H	L	L	5	H
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	H	L	L	3	H

*Sensitivity Rating Reflects Only Soil Conditions.

LFP-G
REASONS

1.	Tilling results in harassment of wildlife and destruction of their habitat
2.	
3.	
4.	
5.	Annual flooding
6.	
7.	
8.	
9.	
10.	
11.	Possible salt water corrosion of utilities
12.	
13.	Harassment of wildlife
14.	
15.	Foot traffic will cause drastic change in vegetation-wildlife harassment
16.	Soil compaction causes a drastic change in vegetation-wildlife harassment
17.	Soil has low bearing capacity-destruction of wildlife habitat and harassment
18.	Soil has low bearing capacity-destruction of wildlife habitat and harassment
19.	Soil has low bearing capacity-destruction of wildlife habitat and harassment
20.	Possible water quality degradation-pollution will affect wildlife habitats
21.	Salt water may corrode sewer lines
22.	
23.	
24.	
25.	High water table and annual flooding may cause pollution of surface and subsurface water-
26.	Marshy conditions, high water table areas
27.	Annual flooding and high water table-possible contamination of the estuary, may affect algae & eel grass of habitat
28.	Removes a small portion of wildlife habitat

Vegetation Removal Results in a Change of the Response Units

11. Lower Flood Plain - Conifer Deciduous - (LFP-CD)
This response unit consists of deep, mixed alluvium occupying the lowest portion of the present river flood plains. The ground surface is generally flat to gently depressional. Due to the proximity to tidal flats and relatively similar elevation, this area is affected by salt water at high tides, and is flooded annually by high stream flow. Groundwater is brackish and at or near the ground surface. The soils are silty clay loam to silty clay. Soils of the Brenner and Nestucca Soil Series have been described on this area by the Soil Conservation Service.

This response unit is characterized by tall stands of spruce, hemlock, fir and alder. Early settlers cleared trees from the majority of the lower flood plain to create pasture land, leaving only two small representative areas of LFP-CD near Otis.

This riparian habitat is used by 111 species of wildlife and is the preferred habitat of at least 87 of these species. The racoon, common garter snake, mink, great blue heron, wood duck, and belted kingfisher are heavily dependent upon this vegetation.

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	L	L	5	H
2.	*Boat Facilities	H	M	M	3/5	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	L	L	2	M
6.	Backpack Camping	L	L	L	2	L
7.	Dike Maintenance	NA				
8.	Dredging	H	M	L	3	H
9.	Bank or Shoreline Fishing	L	M	M	1	L
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	L	M	M	4	M
12.	Grazing	M	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	3/5	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	3/5	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	L	L	3	M
18.	*Gravelled Road	L	L	L	4	M
19.	*Paved Road	L	L	L	5	M
20.	*Septic Tank & Drainfield	H	L	L	5	H
21.	*Sewer Lines	L	M	M	4	H
22.	Stream Channelization Facilities	H	H	M	4	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	H	L	L	5	L
26.	Trail	L	M	M	3/5	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	H	L	L	4	H

*Sensitivity Rating Reflects Only Soil Conditions.

LFP-CD

REASONS

1.	Loss of riparian wildlife habitat
2.	Diversion of channel flow direction causes scour and deposition-harassment of wildlife-removal of habitat
3.	
4.	
5.	Annual flooding
6.	
7.	
8.	Removal of riparian wildlife habitat
9.	Steep bank and thick vegetation hinders foot traffic
10.	
11.	Brackish ground water may corrode utilities-removes large trees used for nesting by wildlife
12.	Destruction of understory vegetation, which is a key part of wildlife habitat
13.	Surface water-dense vegetation-wildlife harassment
14.	
15.	Surface water-dense vegetation-wildlife harassment
16.	
17.	Low bearing strength-wildlife harassment and removal of their habitat
18.	Low bearing strength-wildlife harassment and removal of their habitat
19.	Low bearing strength-wildlife harassment and removal of their habitat
20.	Possible ground water contamination-may affect neighboring response units in the estuary
21.	Removal of large trees which are used by wildlife for nesting
22.	Diversion of channel flow affects adjacent reponse units-scour and deposition-wildlife habitat destruction
23.	
24.	
25.	Potential pollution caused by high ground water and annual flooding-pollution affects wildlife habitat
26.	High water conditions create mud-harassment of wildlife in a key habitat
27.	Annual flooding and high water table conditions-affects vegetation in this and neighboring response units
28.	Removal of wildlife habitat-possible water quality degradation caused by flooding

Vegetation Removal Results in a Change of the Response Units.

12. Upper Flood Plain - Salt Marsh - (UFP-SM) - This response unit contains gravelly loam to silty clay loam soils from a sedimentary and/or basalt source. Groundwater is 0 to 6 feet below the ground surface, depending on time of year, and may be brackish. This response unit is the natural levee along the Salmon River. This natural levee is created when annual flooding deposits silt in the vegetation along the river bank, eventually building the bank to an elevation above annual flooding level.

The response unit is frequently (at over 2 year intervals) flooded by fresh water runoff during large storms. The soils of this response unit are typically the Nehalem Soil Series and Alluvial Land, as described by the Soil Conservation Service. This response unit is represented in only one location within the Area. The majority of the UFP-SM which existed in the past was used as a foundation for dike construction. This natural levee varies in width but is generally an average of 50 feet wide. Small stringers (too small to be mapped) of this response unit, remain along existing diked response units.

The predominant vegetation of this response unit is salt tolerant grasses, rushes and sedges with occasional shrubs.

This response unit is part of the salt marsh complex and is used by most of the 124 species of wildlife that frequent the salt marsh habitat. The close relationship of this response unit to the estuary also makes it part of the riparian complex. Many of the same wildlife species that use the riparian habitat also use the Upper Flood Plain-Salt Marsh.

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	M	L	L	5	L
2.	*Boat Facilities	H	H	M	?	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	3	H
6.	Backpack Camping	L	H	H	1/3	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	2	L
12.	Grazing	M	M	M	5	L
13.	Hiking (Low Concentrations)	L	H	H	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2/4	M
16.	Off Road Vehicles	H	H	L	2/4	M
17.	*Parking Lot	H	L	L	3	M
18.	*Gravelled Road	L	M	M	5	M
19.	*Paved Road	M	M	M	5	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	L	M	M	2	L
22.	Stream Channelization Facilities	H	H	L	?	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	5	H
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	H	M	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

UFP-SM

REASONS

1.	Excelleration of shore-line erosion-nutrients and organic matter are removed from the estuary
2.	Will cause bank sloughing and shore erosion of this and neighboring response units-wildlife habitat loss
3.	
4.	
5.	Potential for flooding-removal of some prime wildlife habitat
6.	Wildlife harassment
7.	
8.	
9.	Excellerates bank sloughing
10.	
11.	
12.	May cause excellerated shore-line erosion which would affect water quality
13.	
14.	
15.	Wildlife harassment
16.	Soil compaction results in loss of vegetation-destruction of wildlife habitat and harassment of wildlife
17.	Periodically flooded-Destroys a portion of the salt marsh productivity
18.	Destroys a portion of the salt marsh wildlife habitat
19.	Maintenance problems caused by high water table and periodic flooding-may act as dike altering wildlife habitat
20.	High water table and periodic flooding-potential of contamination of wildlife habitat
21.	Salt content of ground water may cause corrosion of lines
22.	Diversion of channel flow direction may affect this and neighboring response units
23.	
24.	
25.	Toilet may become boyant during high water conditions-potential for contamination of surface/subsurface water-habit.
26.	
27.	High water table and periodic flooding may cause off-site vegetative damage-damage to wildlife habitat
28.	May interfer with surface water movement during flooding-permanent removal of wildlife habitat

Vegetation Removal Results in a Change of the Response Units.

13. Upper Flood Plain - Diked Marsh - (UFP-DM) - This response unit was created by construction of a dike on an upper flood plain-salt marsh. Remnants of the salt marsh remain, but the majority of UFP-DM contains only fresh water species of vegetation, such as sedges, rushes, skunk cabbage, hair grass and bent grass with occasional shrubs and red alder.

This response unit contains deep gravelly loam to silty clay loam soils from a sedimentary and/or basalt source. Groundwater is 0 to 6 feet below the ground surface and may be brackish, depending on time of year. The natural levee along the Salmon River is elevated above the lower flood plain. The natural levee along the river is created when annual flooding deposits silt in the vegetation along the river bank, eventually building the bank to an elevation above the annual flooding level. The area is frequently flooded (at over 2 year intervals) by fresh water runoff. The soils of this response unit are typically the Nehalem Soil Series and Alluvial Land, as described by the Soil Conservation Service.

The same 133 species of wildlife found in diked salt marsh areas and most of the 130 species found in flood plain grass communities are also found in this response unit because of the similarity of vegetation.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	VISUAL TOLERANCE SUITABILITY
1.	*Agriculture Crops	M	L	L	5	L
2.	*Boat Facilities	H	H	M	5	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	H	H	L	1	M
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	1	L
12.	Grazing	M	H	M	2	L
13.	Hiking (Low Concentrations)	L	H	H	2/4	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2/4	M
16.	Off Road Vehicles	H	L	L	3	M
17.	*Parking Lot	H	L	L	1	M
18.	*Gravelled Road	L	M	M	2	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	L	M	M	2	L
22.	Stream Channelization Facilities	H	H	L	4	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	5	H
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	L	M	M	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

UFP-DM

REASONS

1.	Destruction of wildlife habitat
2.	Shoreline erosion and bank sloughing-diverts water causing alteration of this and other response units
3.	
4.	
5.	Flooding at over 2 year intervals
6.	
7.	Alters entire response unit
8.	
9.	Steep banks-accelerated shoreline erosion
10.	
11.	
12.	Accelerates shore erosion-potential water quality degradation
13.	
14.	
15.	Soil compaction results in vegetative change-wildlife harassment
16.	Poor terrain-soil compaction-destruction of vegetation and wildlife harassment
17.	Destruction of a major portion of the response unit
18.	Frequent flooding causes maintenance problems-destruction of freshwater marsh wildlife habitat
19.	High water table and frequent flooding causes maintenance problems-wildlife harassment and destruction of habitat
20.	High water table-contamination of water and marsh and wildlife habitat
21.	Brackish groundwater may corrode pipes
22.	Interference with channel flow affects this and neighboring response units-destruction of wildlife habitat
23.	
24.	
25.	Flooding and high groundwater may cause water quality degradation-contamination of wildlife habitats
26.	
27.	Flooding and high groundwater may cause water quality degradation-contamination of wildlife habitats
28.	Interference with surface water movement during flooding periods-loss of some wildlife habitat

Vegetative Removal Results in a Change of the Response Units.

14. Upper Flood Plain - Grass - (UFP-G) - This response unit contains deep gravelly loam to silty clay loam soils from a sedimentary and/or basalt source. It occupies the present flood plain above lower, depressional flooded or tideland areas. Groundwater is 0 to 6 feet below the ground surface, depending on time of year. This response unit is created when annual flooding deposits silt in the vegetation along the river bank, eventually building the bank to an elevation above the annual flooding level. The unit is frequently flooded (at over 2 year intervals) by fresh water runoff during large storsm. The soils of this response unit are typically the Nehalem Soil Series and Alluvial Land, as described by the Soil Conservation Service.

This response unit is in the late stages of development. It is found primarily on the east edge of the Cascade Head Scenic-Research Area where the Salmon River has had the most time to deposit material to build the upper flood plain. Flooding frequency in this area is somewhat less than in other areas of the upper flood plain.

The original stands of timber were cleared to produce a grass vegetative community with scattered shrubs and red alder.

The upper flood plain-grass community is frequented by 130 species of wildlife. It is the preferred habitat of 41 species. The common garter snake, white-crowned sparrow, Townsend vole, marsh hawk and sparrow hawk commonly use this grass community.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	L	M	M	2	L
2.	*Boat Facilities	H	H	M	2	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	M	M	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	1	L
12.	Grazing	L	H	H	1	L
13.	Hiking (Low Concentrations)	L	H	H	1/3	L
14.	*Residential Housing	L	L	L	2	H
15.	Concentrated Foot Traffic	H	H	M	1/3	M
16.	Off Road Vehicles	H	H	M	2/4	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	L	H	H	2	M
19.	*Paved Road	L	M	M	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	L
21.	*Sewer Lines	L	M	M	2	L
22.	Stream Channelization Facilities	H	H	L	3	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	3	H
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	H	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

UFP-G

REASONS

1.	
2.	Possible diversion of channel flow causing stream sloughing and channel scour or deposition
3.	
4.	
5.	
6.	
7.	
8.	
9.	Steep banks-accelerated bank sloughing
10.	
11.	
12.	Susceptible to bank sloughing
13.	Wildlife harassment
14.	
15.	Wildlife harassment
16.	Soil compaction results in plant community change or reduction-destruction of wildlife habitat & wildlife harassment
17.	Periodically flooded causing maintenance problems
18.	
19.	Periodically flooded causing maintenance problems
20.	Possible water quality degradation because of high water and frequent flooding-potential wildlife habitat pollution
21.	High water table creates construction problems
22.	Diversion of channel flow direction may affect adjacent response units
23.	
24.	
25.	Possible water quality degradation caused by frequent flooding and high water table-wildlife habitat contamination
26.	
27.	Potential for water quality degradation by flooding and high water table-herbicides may affect wildlife habitat
28.	Interference with surface water movement resulting in surface erosion

Vegetative Removal Results in a Change of the Response Units.

15. Upper Flood Plain - Shrub - (UFP-S) - This response unit contains deep gravelly loam to silty clay loam soils from a sedimentary and/or basalt source. Groundwater is 0 to 6 feet below the ground surface, depending on time of year. This unit is created when annual flooding deposits silt in the vegetation along the river bank, eventually building the bank to an elevation above the annual flooding level. The unit is frequently flooded (at over 2 year intervals) by fresh water runoff during large storms. The flooding frequency of this response unit is somewhat less than other upper flood plain units because the Salmon River has had more time to build up the natural levee. The soils of this response unit are typically the Nehalem Soil Series and Alluvial Land, as described by the Soil Conservation Service.

The original stands of timber which occupied this response unit were cleared to produce a grass vegetative community, however, because of lack of maintenance, shrubs have invaded. Shrubs commonly found in this area are blackberry, huckleberry and elderberry.

This flood plain habitat is used by the same 126 species of wildlife which use the lower flood plain-shrub habitat. Bush rabbit, song sparrows, and bobcats are commonly found in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	L	M	M	4	M
2.	*Boat Facilities	H	H	M	2	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	M	M	1	L
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	M	M	1	L
12.	Grazing	M	M	M	2	L
13.	Hiking (Low Concentrations)	L	M	M	1	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	H	M	L	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	L	H	H	2	M
19.	*Paved Road	L	M	M	4	M
20.	*Septic Tank & Drainfield	H	L	L	5	M
21.	*Sewer Lines	L	M	M	2	M
22.	Stream Channelization Facilities	H	H	M	3	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	3	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	M	H	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

UFP-S

REASONS

1.	Drastic change in wildlife habitat
2.	May cause bank and shoreline erosion-is susceptable to bank sloughing
3.	
4.	
5.	
6.	
7.	
8.	
9.	May cause bank sloughing-dense vegetation and steep banks
10.	
11.	
12.	Accelerates bank sloughing
13.	
14.	
15.	
16.	Compaction of soil results in plant community reduction-harassment of wildlife-destruction of wildlife habitat
17.	Subject to periodic flooding-destruction of wildlife habitat
18.	
19.	Subject to periodic flooding which causes maintenance problems-harassment of wildlife and destruction of habitat
20.	High water table causes maintenance problems-harassment of wildlife and destruction of their habitat
21.	High water table causes construction problems-brackish groundwater may cause corrosion
22.	Diversion of channel flow direction may affect adjacent response units-removal or change of wildlife habitat
23.	
24.	
25.	High water table-possible water quality degradation-periodic flooding-potential pollution of estuary
26.	
27.	Periodic flooding may cause water quality degradation-may affect estuary and streamside plants and animals
28.	Interference with surface water movement during flooding

Vegetative Removal Results in a Change of the Response Units.

16. Upper Flood Plain - Conifer Deciduous - (UFP-CD) - Much of the UFP on the east side of the Scenic-Research Area was once covered by tall stands of trees. Trees were cleared to produce pasture. Presently, only two small areas of this response unit remain.

This response unit contains deep gravelly loam to silty clay loam soils from a sedimentary and/or basalt source. Groundwater is 0 to 6 feet below the ground surface, depending on time of year, and may be brackish. This unit was created when annual flooding deposited silt in the vegetation along the river bank, eventually building the bank to an elevation above the annual flooding level. The area is frequently flooded (at over 2 year intervals) by fresh water runoff during large storms. The soils of this response unit are typically the Nehalem Soil Series and Alluvial Land, as described by the Soil Conservation Service.

The principle vegetative cover of this response unit is red alder, some bigleaf maple, Sitka spruce and western hemlock.

This response unit is the preferred habitat of 18 wildlife species and is typically used by an additional 142 species. Most of this response unit could be classified as riparian habitat, which is used by 160 species. Wilson's warbler, screech owl, ruffed grouse, racoon, mink, and trowbridge shrew are frequently present. Great blue heron, kingfishers, and mallard ducks are riparian habitat species commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE SUITABILITY	VISUAL TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	M	M	5	H
2.	*Boat Facilities	H	H	M	3	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	M	M	1	L
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	L	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	3	M
18.	*Gravelled Road	L	H	H	4	M
19.	*Paved Road	L	M	M	5	M
20.	*Septic Tank & Drainfield	H	L	L	3	H
21.	*Sewer Lines	M	M	M	3	H
22.	Stream Channelization Facilities	H	H	L	4	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	M	M	5	H

*Sensitivity Rating Reflects Only Soil Conditions.

UFP-CD

REASONS

1.	Destruction of wildlife habitat
2.	Possibly bank sloughing-shoreline erosion-loss of wildlife habitat
3.	
4.	
5.	
6.	
7.	
8.	
9.	Steep banks and dense vegetation
10.	
11.	May remove large trees used for nesting and perching by wildlife
12.	Accelerates erosion on bank-removes understory vegetation which is key part of wildlife habitat
13.	Dense vegetation and high ground water condition-harassment of wildlife
14.	
15.	Dense vegetation and high ground water condition-harassment of wildlife
16.	
17.	Periodic flooding-loss of wildlife habitat and harassment of wildlife
18.	Loss of wildlife habitat and harassment of wildlife
19.	Periodic flooding may cause maintenance problems-removes wildlife habitat and harasses wildlife
20.	High ground water-possible water quality degradation-potential pollution of estuary
21.	Brackish groundwater may corrode pipes-removal of old trees affects wildlife habitat
22.	Diversion of channel flow direction affects this and other response units-vegetation destruction leads to hab. loss
23.	
24.	
25.	High groundwater may cause vault to float-periodic flooding-potential pollution of estuary
26.	Some harassment of wildlife in a key wildlife habitat
27.	Periodic flooding may cause water quality degradation-may affect vegetation in estuary-wildlife habitat loss
28.	Interference with surface water movement results in surface erosion-removal of wildlife habitat

Vegetative Removal Results in a Change of the Response Units.

17. Active Dune - Beach Grass - (AD-BG) - This response unit is found on the sand spit of the Salmon River. There are three major types of dunes within this response unit (foredune, hummocks and parabola[1/]). The dominant plant species of this unit is European beach grass. This beach grass was introduced on the Oregon Coast and spread to the Salmon River Area in the 1940's. Portions of this response unit are densely covered with beach grass and there is no sand movement. In other areas, the grass is not well established and the sand is constantly moving. Scattered lodgepole pine and shrubs may also be found within this response unit.

The beach grass plant community is used by 74 species of wildlife and is the preferred habitat for 8 of these species. Savannah sparrows, white-crowned sparrows, California ground squirrels and common nighthawks are commonly seen in this habitat.

1/ Resource Inventory Report for the Oregon Dunes Recreation Area

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	H	L	L	3	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	H	H	1	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	H	H	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2	M
16.	Off Road Vehicles	M	H	M	4	M
17.	*Parking Lot	NA				
18.	*Gravelled Road	NA				
19.	*Paved Road	NA				
20.	*Septic Tank & Drainfield	M	H	M	2	L
21.	*Sewer Lines	L	M	M	1	L
22.	Stream Channelization Facilities	H	M	L	2	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	M	M	1	H
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	L	H	H	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

AD-BG

REASONS

1.	
2.	Alteration of stream flow may cause channel scour and deposition-subject to undercutting & wind & water erosion
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	Vehicles will accelerate sand movement
17.	
18.	
19.	
20.	Some potential for water quality degradation
21.	
22.	Diversion of channel flow affects this and adjacent response units-scour and deposition
23.	
24.	
25.	Subject to wind and water erosion
26.	
27.	May accelerate sand movement-potential influence on estuary wildlife habitat
28.	

Vegetative Removal Results in a Change of the Response Units.

18. Stabilized Dune - Conifer Deciduous - (SD-CD) - This response unit is an older dune which has been naturally stabilized by invading vegetation. The soil ranges in depth from 3' to 20' and is mainly sand with iron deposits in layers at various depths.

Portions of this unit, which are located near the river, are subject to seasonal flooding.

Wind erosion does not affect this response unit, however, if vegetation were eliminated, "blow-outs" could occur. The terrain is rather uneven with slopes ranging from zero to 50%. Depressional areas may contain perched water tables, which create ponded areas.

The vegetation of this area is dominated by an overstory of lodgepole pine and some alder. The understory is composed of a thick shrub layer with dominant species of salal, huckleberry and rhododendron.

This wildlife is quite similar to the intermediate conifer plant community. It is the preferred habitat of 31 species of wildlife and typically receives use by 77 other species. Some portions of this response unit may be classified as riparian habitat and provide nesting, feeding, and shelter for many species of shorebirds. The steller's jay, pine siskin, spotted skunk, and chickaree are common in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	M	M	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	H	H	1	L	
11.	*Underground Utilities	L	H	H	2	M	
12.	Grazing	M	L	L	2	L	
13.	Hiking (Low Concentrations)	L	L	L	2	L	
14.	*Residential Housing	H	M	L	3	M	
15.	Concentrated Foot Traffic	H	M	L	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	L	M	M	2	M	
18.	*Gravelled Road	L	H	H	3	M	
19.	*Paved Road	L	H	H	4	M	
20.	*Septic Tank & Drainfield	L	H	M	2	H	
21.	*Sewer Lines	M	M	M	3	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	L	H	H	1	L	
26.	Trail	L	M	M	1	L	
27.	Herbicides	H	M	L	3	H	
28.	*Land Fills	L	M	M	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

SD-CD
REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	May cause wind erosion
12.	May cause wind or water erosion-dense vegetation
13.	
14.	May cause wind or water erosion-steep terrain in some areas-periodic flooding in some areas
15.	Dense vegetation-loss of vegetative cover may result in wind erosion
16.	
17.	Periodic flooding in some portions-may cause wind erosion, particularly on cut slopes
18.	
19.	
20.	Potential ground water pollution
21.	
22.	
23.	
24.	
25.	
26.	Steep terrain in some portions-may cause wind erosion-trail rutting
27.	Potential water quality degradation affecting wildlife habitats-some wind problems
28.	Fill around trees causes vegetative change and loss of wildlife habitat

Vegetative Removal Results in a Change of the Response Units.

19. Elevated Alluvial Terrace - Grass - (EAT-G) - Terraces formed from mixed sedimentary and basalt parent material that now lie above present flood plain form this response unit. The soils are deep silt loams and silty clay loams. The land surface is flat to gently sloping with many shallow depressional areas. Groundwater may be as shallow as one foot below the surface in the depressions to greater than 6 feet on the flat or sloping areas. Infiltration and percolation rates are slow to moderate. The flooding frequency for this response unit is 100 year storm intensity. The soils are not affected by salt water. Soils which were described by the Soil Conservation Service for this response unit are faily stable and lend themselves well to use and activity. The soils that were identified are Knappa, Chitwood and Quilliute.

The vegetation on this response unit could be described as upland grasslands. The vegetation is comprised as a mixture of grasses, herbs and shrubs. Common herb species in this community are swordfern, bracken fern, giant horsetail and cow parsnip. Grass species present are common velvet grass, Idaho bent grass, blue wild rye, sweet verile grasses, red fescue, orchard grass and Alaskan brome. Thimbleberry, salmonberry and salal often occur on the periphery of this community or as scattered clumps within them. It is not uncommon to see seedlings of Sitka spruce establishing on rotted trunks of trees that have fallen into the area.

This upland grass plant community is used by 84 wildlife species and is the preferred habitat for 27 animals. Many of the same species that occur in the flood plain grass habitat also frequent this upland grass community. The black-tailed deer, coast mole, red-tailed hawk, sparrow hawk, and common garter snake frequently use this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	L	H	H	3	L
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	H	H	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	H	H	1	L
12.	Grazing	L	H	H	1	L
13.	Hiking (Low Concentrations)	L	H	H	1	L
14.	*Residential Housing	L	H	H	3	H
15.	Concentrated Foot Traffic	H	H	M	2	M
16.	Off Road Vehicles	M	H	M	3	M
17.	*Parking Lot	L	H	H	2	M
18.	*Gravelled Road	L	H	H	2	M
19.	*Paved Road	L	H	H	4	M
20.	*Septic Tank & Drainfield	L	H	H	2	L
21.	*Sewer Lines	L	H	H	2	L
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	?	H
26.	Trail	L	H	H	?	L
27.	Herbicides	H	H	M	3	H
28.	*Land Fills	L	H	H	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

EAT-G
REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	Drastic vegetation change-destruction of a portion of the wildlife habitat
16.	Destruction of vegetative community by compaction of soil
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential drift into estuary causing wildlife habitat change
28.	

Vegetative Removal Results in a Change of the Response Units.

20. Elevated Alluvial Terrace - Shrub - (EAT-S) - Terraces formed from mixed sedimentary and basalt parent material that now lie above present flood plain form this response unit. The soils are deep silt loams and silty clay loams. The land surface is flat to gently sloping with many shallow depressional areas. Groundwater may be as shallow as one foot below the surface in the depressions to greater than 6 feet on the flat or sloping areas. Infiltration and percolation rates are slow to moderate. The flooding frequency for this response unit is 100 year storm intensity. The soils are not affected by salt water. Soils which were described by the Soil Conservation Service for this response unit are faily stable and lend themselves well to use and activity. The soils that were identified are Knappa, Chitwood and Quilliute.

The original conifer or deciduous tree stands were removed from this response unit to produce pasture land. The shrub cover that exists today is the first step in the process back to conifer or deciduous stands. The dominant shrub species of this response unit are salmonberry, elderberry, huckleberry and blackberry. There is also scattered alder and Sitka spruce.

The shrub plant community is inhabited by 126 species of wildlife. It is the preferred habitat for 69 of these species. Bush rabbits, song sparrows, rufous-sided towhees and rufous hummingbirds commonly use this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	L	H	H	4	M
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	H	H	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	H	H	2	L
12.	Grazing	L	L	L	1	L
13.	Hiking (Low Concentrations)	L	M	M	1	L
14.	*Residential Housing	L	H	H	3	H
15.	Concentrated Foot Traffic	L	M	M	2	M
16.	Off Road Vehicles	H	M	L	3	M
17.	*Parking Lot	L	H	H	2	M
18.	*Gravelled Road	L	H	H	3	M
19.	*Paved Road	L	H	H	4	M
20.	*Septic Tank & Drainfield	L	H	H	2	M
21.	*Sewer Lines	L	H	H	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	1	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	L	H	H	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

EAT-S
REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	Dense vegetation restricts foot traffic
14.	
15.	Potential destruction of plant community-dense vegetation restricts traffic
16.	Soil compaction results in drastic vegetation change-dense vegetation may limit use
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
26.	
27.	Drastic vegetation change-loss of wildlife habitat
28.	

Vegetative Removal Results in a Change of the Response Units.

21. Elevated Alluvial Terrace - Deciduous - (EAT-D) - Terraces formed from mixed sedimentary and basalt parent material now lie above the present flood plain forming this response unit. The soils are deep silt loams and silty clay loams. The land surface is flat to gently sloping with many shallow depressional areas. Groundwater may be as shallow as one foot below the surface in the depressions to greater than 6 feet on the flat or sloping areas. Infiltration and percolation rates are slow to moderate. The flooding frequency for this response unit is that of 100 year storm intensities. Soils are not affected by salt water. Soils described by the Soil Conservation Service for this response unit are fairly stable and lend themselves well to use and activity. The soils that were identified are Knappa, Chitwood and Quilliute.

This response unit is dominated by deciduous trees with red alder being the major variety with a scattering of bigleaf maple. Sitka spruce, western hemlock and Douglas fir are the common conifers present and may comprise from 1% to 20% of the stand. This deciduous stand may have been caused by disturbance such as logging or land clearance for homesteads and is now reverting back to a conifer tree stand. The density of the understory vegetation varies with the age and density of the trees. Salmonberry, swordfern and mosses are typically present. Young, dense stands of deciduous trees often have little understory vegetation because the tops of the trees overlap and keep the sunlight from reaching the ground. Older stands are more open and often have well developed understories.

As many as 106 wildlife species may use the deciduous tree stands. The amount of shrubs, dead-defective trees and the size of the trees all play a role in determining how many wildlife species will be present. The ruffed grouse, marsh shrew, downy woodpecker, and western wood pewee are commonly found in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE LEVEL SUITABILITY CAPABILITY		VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	L	M	H	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	H	H	2	M
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	L	H	H	2	M
12.	Grazing	L	L	L	1	L
13.	Hiking (Low Concentrations)	L	M	M	1	L
14.	*Residential Housing	L	H	H	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	H	H	2	M
18.	*Gravelled Road	L	H	H	3	M
19.	*Paved Road	L	H	H	4	M
20.	*Septic Tank & Drainfield	L	H	H	2	H
21.	*Sewer Lines	L	H	H	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	L	H	H	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

EAT-D

REASONS

1.	Complete change of wildlife habitat type
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	Dense vegetation
12.	
13.	Dense vegetation
14.	
15.	Dense vegetation
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	Complete change of habitat type
24.	Complete change of habitat type
25.	
26.	
27.	Drastic vegetative change-potential drift into estuary and other plant communities causing wildlife habitat damage
28.	

Vegetative Removal Results in a Change of the Response Units.

22. Active Landslide - (ALS-D) - This response unit consists of soil and/or rock material which is activly sliding. The slies are rotational in nature, that is, they tend to turn over. The soils are usually derived from mixed basalt or sedimentary origin and occur over soft, highly weathered sedimentary bedrock which is a gray color. The soils are moderately deep to very deep clays and clay loams. ALS-D occurs in areas of past geologic landslide activity where the topography is uneve, hummocky and highly dissected. On the whole, the ground is moderately steep (30%-50%) but in some locations, benches and steep pitches may cause slopes to range from 10%-80% gradient. Activation of these landslide areas has been due to road construction. Prior to activation, these response units would have been classified under the heading of Landslide Deposit (LSD).

The vegetative cover in this response unit is deciduous, mainly young red alder.

Young deciduous tree stands are used by 71 species of wildlife. The Townsend chipmunk, warbling vireo are often present.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE CAPABILITY	VISUAL TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	H	L	L	1	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	1	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	H	L	L	2	H
21.	*Sewer Lines	H	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	H	M	L	5	H
24.	Selective Timber Harvest	M	L	L	5	H
25.	Vault Toilet	L	L	L	1	M
26.	Trail	L	M	M	1	L
27.	Herbicides	H	M	L	5	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

ALS-D

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Steep terrain-high water table-dense vegetation
7.	
8.	
9.	
10.	
11.	Decrease in slope stability-interference with groundwater movement-subject to mass movement
12.	
13.	Steep terrain-dense vegetation
14.	
15.	Steep terrain-dense vegetation
16.	
17.	High water table-subject to mass movement
18.	High water table-subject to mass movement-decrease in slope stability-concentration of surface water
19.	High water table-subject to mass movement-decrease in slope stability-concentration of surface water
20.	Subject to mass movement-decrease in slope stability-may affect adjacent land response units
21.	Subject to mass movement-decrease in slope stability-may affect adjacent land response units
22.	
23.	Subject to mass movement-decrease in slope stability-may affect adjacent land response units
24.	Subject to mass movement-decrease in slope stability-may affect adjacent land response units
25.	Subject to mass movement-potential water quality degradation
26.	Steep terrain-dense vegetation
27.	Drastic vegetation change-potential water quality degradation-eliminates deciduous wildlife habitat
28.	Decrease in slope stability-steep terrain-subject to mass movement

Vegetative Removal Results in a Change of the Response Units.

23. Landslide Deposit - Grass - (LSD-G) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, very uneven and locally highly dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loam with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5-50%+ typically. Soils from the Astoria series are found in this response unit (Soil Conservation Service). It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

This grass covered response unit adds variety and interest to the landscape when combined with surrounding heavily vegetated response units. The present vegetative cover was probably created by wild fire or logging activities and may have been maintained by additional burnings to create grazing areas for livestock. Some common herb species in these communities are swordfern, brackenfern, giant horsetail, cow parsnip and Oregon wild cucumber. Common variety of grasses present are Idaho bent grass, common velvet grass, blue wild rye, red fescue, orchard grass and Alaskan brome. Scattered shrubs, such as thimbleberry and salmonberry, as well as saplings of Sitka spruce and red alder, are invading the perifery. Some of these open grassy areas may have been periodically cultivated for hay.

This type of grassland is used by 84 species of wildlife, of which it is the preferred habitat of 27 of these species. White-crowned sparrows, coast moles, black-tailed deer, bobcats, and Northwestern garter snakes commonly use this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL		
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	H	H	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	1	L	
11.	*Underground Utilities	H	L	L	1	L	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	H	H	1	L	
14.	*Residential Housing	H	L	L	3	H	
15.	Concentrated Foot Traffic	H	H	M	1	M	
16.	Off Road Vehicles	H	H	L	3	M	
17.	*Parking Lot	H	L	L	2	H	
18.	*Gravelled Road	H	L	L	3	H	
19.	*Paved Road	H	L	L	4	H	
20.	*Septic Tank & Drainfield	H	L	L	2	L	
21.	*Sewer Lines	H	L	L	2	L	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	M	M	M	2	H	
26.	Trail	L	M	M	1	L	
27.	Herbicides	H	H	L	3	H	
28.	*Land Fills	M	M	M	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-G

REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	Forest products lacking
11.	
12.	
13.	
14.	Decrease in slope stability-interference with groundwater movement-subject to mass movement-low bearing strength
15.	
16.	Interference with surface water movement-decrease in slope stability-concentration of surface water-steep terrain
17.	Loss of some wildlife habitat-decrease in slope stability-concentration of surface water-steep slopes
18.	Interference with surface water movement results in surface erosion-subject to mass movement-high water table
19.	Interference with surface water movement results in surface erosion-subject to mass movement-high water table
20.	High water table-slow percolation-interference with groundwater movement-decrease in slope stability
21.	Subject to mass movement-decrease in slope stability-potential water quality degradation
22.	
23.	
24.	
25.	Possible water quality degradation-subject to mass movement
26.	
27.	Potential water quality degradation because of high water table-loss of wildlife habitat
28.	Interference with surface water movement-decrease in slope stability-loss of wildlife habitat

Vegetative Removal Results in a Change of the Response Units.

24. Landslide Deposit - Shrub - (LSD-S) - Moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, and locally highly dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service).

This response unit is generally located mid-way up the slope on the north side of the Salmon River or near the top of the slope on the south side of the Salmon River. Water tolerant plants growing in this response unit indicate a high water table.

This shrub covered response unit is probably a result of shrubs invading previously grassland plant communities. Shrubs such as blackberry, elderberry, and thimbleberry are common in this response unit.

The abundance of berries, shrubs, forbs and grasses make this response unit attractive to wildlife. This habitat is used by 126 species of wildlife. It is heavily used by black-tailed deer, bush rabbits, deermice, and band-tailed pidgeons. Two species of salamanders are usually present under rotting logs.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	H	L	L	2	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	H	L	L	3	H
15.	Concentrated Foot Traffic	M	M	M	1	M
16.	Off Road Vehicles	H	L	L	3	M
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	H	L	L	2	M
21.	*Sewer Lines	H	L	L	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	2	M
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	4	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-S
REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	Dense vegetation-decrease in slope stability-concentration of surface water-wildlife harassment
17.	Interference with groundwater-decrease in slope stability-concentration of surface water-loss of wildlife habitat
18.	Interference with surface water movement-interference with groundwater movement-wildlife harassment
19.	Interference with surface water movement-interference with groundwater movement-wildlife harassment
20.	Slow percolation-potential water quality degradation-high water table-subject to mass movement
21.	Slow percolation-potential water quality degradation-high water table-subject to mass movement
22.	
23.	
24.	
25.	Potential water quality degradation-subject to mass movement-high water table-steep terrain
26.	
27.	High water table-water quality degradation-loss of wildlife habitat
28.	Interference with surface water movement-decrease in slope stability-high water table

Vegetative Removal Results in a Change of the Response Units.

25. Landslide Deposit - Shrub-1 - (LSD-S-1) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky and locally dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5%-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service.)

This response unit is generally located mid-way up the slope on the north side of the Salmon River or near the top of the slopes on the south side of the Salmon River. It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

This type of shrub community is a direct result of logging activities. The overstory of trees has been removed, leaving only a shrub community. Shrubs that are common to alder or pure conifer stands are likely to occur in this response unit, however, the more shade-loving species will be dominated by species such as thimbleberry.

Most of the 120 wildlife species found in LSD-S will also be found in this response unit. Black bear, racoon, coyote, orange-crowned warbler, and black-headed grosbeak may be found in these plant communities.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	H	L	L	1	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	H	L	L	3	H
15.	Concentrated Foot Traffic	M	L	L	1	M
16.	Off Road Vehicles	H	L	L	3	M
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	H	L	L	2	M
21.	*Sewer Lines	H	L	L	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	M	M	M	2	M
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	4	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-S-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	Forest products lacking
11.	
12.	
13.	
14.	May trigger mass movement of soil-high water table-low bearing strength-wildlife harassment
15.	
16.	Interference and concentration of surface water-decrease in slope stability-vegetative change-change wildlife hab.
17.	Interference with surface and subsurface water movement-decrease in slope stability & possible mass movement
18.	Interference with surface and subsurface water movement-decrease in slope stability & possible mass movement
19.	Interference with surface & subsurface water movement-decrease in slope stability-wildlife harassment
20.	Slow percolation-interference with subsurface water movement-potential water quality degradation
21.	Slow percolation-interference with subsurface water movement-potential water quality degradation
22.	
23.	
24.	
25.	Potential water quality degradation-subject to mass soil movement-high water table
26.	
27.	Contamination of surface and subsurface water
28.	Decrease in slope stability-steep side slopes

Vegetative Removal Results in a Change of the Response Units.

26. Landslide Deposit Deciduous - (LSD-D) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, very uneven and locally highly dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. It is from this response unit that ALS was formed. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5%-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service)

It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

The vegetation of this response unit is dominated by deciduous trees. Red alder is the major deciduous tree species, but the response unit may contain some scattered bigleaf maple. One or more conifer species may also comprise a major portion of the stand.

Variations in deciduous stands are evident. Some stands are nearly pure alder, while others approach a mixed conifer-deciduous stand.

The density of understory vegetation varies with the age of the overstory. That is, the younger the stand, the less shrub vegetation will occur, or the older the stand, the more understory will be found.

Deciduous tree stands are used by 106 species of wildlife. The numbers and kinds of species vary with the size of the trees and the shrub mixture. Ruffed grouse, marsh shrews, and white-breasted nuthatch prefer these deciduous stands.

LAND

	ACTIVITY OR USE	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	H	L	L	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	M	L	L	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	H	L	L	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	H	L	L	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	H	L	L	2	H
21.	*Sewer Lines	H	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	H	H	L	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	M	M	M	2	L
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	4	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-D

REASONS

1.	
2.	
3.	
4.	
5.	Difficult construction because of uneven terrain
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	Potential for mass soil movement-concentration of surface water-high water table
15.	
16.	
17.	Interference with surface and subsurface water movement
18.	Interference with surface and subsurface water movement-decrease in slope stability-subject to mass movement
19.	Interference with surface and subsurface water movement-decrease in slope stability-subject to mass movement
20.	Interference with subsurface water movement-potential water quality degradation-slow percolation
21.	Interference with subsurface water movement-mass soil movement may break line
22.	
23.	Decrease in slope stability-mass soil movement may affect this and adjacent response units-dest. of wildlife habitat
24.	Difficult logging-regeneration problem-drastic vegetation change and change in wildlife habitat
25.	Potential water quality degradation-subject to mass soil movement-high water table
26.	
27.	Potential for contamination of surface and subsurface water
28.	May trigger mass soil movement-interference with surface and subsurface water movement

Vegetative Removal Results in a Change of the Response Units.

27. Landslide Deposit - Conifer Deciduous - (LSD-CD) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, very uneven and locally highly dissected by small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5%-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service)

This response unit is generally located mid-way up the slope on the north side of the Salmon River or near the top of the slope on the south side of the Salmon River. It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

The vegetation of this response unit is a mixture of conifer and deciduous trees. The percentage of deciduous and conifer trees vary in different stands, but neither dominate.

The understory vegetation varies with age and density of the stand. Red elderberry and salmonberry are common shrubs. Vine maple and thimbleberry also occur in many stands. Swordfern and false lily of the valley are common plants of the forest floor.

Older mixed stands are used by 160 species of wildlife. The variety of conifer, deciduous trees, various ages of trees, and dead trees produce a variety of feeding and nesting opportunities. The Wilson's warbler, Western flycatcher, and band-tailed pidgeon are usually present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	H	L	L	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	M	L	L	2	M
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	H	L	L	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	H	L	L	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	H	L	L	2	H
21.	*Sewer Lines	H	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	H	H	L	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	M	M	M	2	L
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	4	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-CD

REASONS

1.	Removal of existing vegetation would decrease slope stability-drastic change in wildlife habitat
2.	
3.	
4.	
5.	High water table-subject to mass movement-steep terrain
6.	Dense vegetation-water at or near the surface
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	Decrease in slope stability-may cause mass soil movement-interference with ground water-highly dissected-steep ter.
15.	
16.	
17.	Concentration of surface water-decrease in slope stability-potential water quality degradation
18.	Interference with surface/subsurface water movement-mass soil movement potential-wildlife harassment
19.	Interference with surface/subsurface water movement-mass soil movement potential-wildlife harassment
20.	Interference with subsurface water movement-high water table-decrease in slope stability/mass soil movement
21.	Interference with groundwater movement-if mass soil movement occurs, line would be broken
22.	
23.	Removal of vegetation may cause mass soil movement-interference with surface water-elim. wildlife habitat
24.	Difficult logging-regeneration problems-eliminates a portion of wildlife habitat
25.	High water table-potential for surface/subsurface contamination
26.	
27.	Potential for surface water quality degradation
28.	Interference with surface water movement-decrease in slope stability-high water table

Vegetative Removal Results in a Change of the Response Units.

28. Landslide Deposit - Conifer-1 - (LSD-C-1) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, very uneven and locally highly dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5%-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service)

This response unit is generally located mid-way up the slope on the north side of the Salmon River or near the top of the slope on the south side of the Salmon River. It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

This response unit is a direct result of logging activities. Typically, this young conifer stand is approximately 15 years old and was established by a combination of planting and natural seeding. The vegetation is dense and it is composed primarily of Sitka spruce with some Western hemlock.

Young conifer stands are used by 66 species of wildlife, however, it is the preferred habitat of only 6 species. The fox sparrow, Swainson's thrush, sharp skinned hawk and chickaree can usually be seen in this young forest stand.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	1	L	
11.	*Underground Utilities	H	L	L	1	M	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	1	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	M	L	L	1	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	H	L	L	2	H	
18.	*Gravelled Road	H	L	L	3	H	
19.	*Paved Road	H	L	L	4	H	
20.	*Septic Tank & Drainfield	H	L	L	2	H	
21.	*Sewer Lines	H	L	L	2	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	M	M	M	2	L	
26.	Trail	L	M	M	1	L	
27.	Herbicides	H	H	L	3	H	
28.	*Land Fills	H	H	L	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-C-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	High water table-dense vegetative barrier
7.	
8.	
9.	
10.	Unit lacks forest products
11.	Interference with ground water movement-decreased slope stabiltiy-subject to mass soil movement
12.	
13.	
14.	
15.	
16.	
17.	Interference with surface water movement-decreased slope stability-steep terrain
18.	Interference with surface/subsurface water movement-decreased slope stability-high water table-wildlife harassment
19.	Interference with surface/subsurface water movement-decreased slope stability-high water table-wildlife harassment
20.	Interference with subsurface water movement-potential of contamination of underground water-slow percolation
21.	Interference with subsurface water movement-decrease in slope stability may cause break in sewer line
22.	
23.	
24.	
25.	High water table-potential water quality degradation-soil subject to mass movement
26.	
27.	Potential of water quality degradation
28.	Decrease in slope stability-interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

29. Landslide Deposit - Conifer - (LSD-C) - Deep to moderately deep unconsolidated deposits of landslide debris from mixed sedimentary and basaltic rock form this response unit. It is hummocky, very uneven and locally highly dissected with small streams. It occurs between and around response units SRHC and SRLC, above the flood and tidal influence. During rainy periods, groundwater surfaces at the interface of the various landslide lobes, indicating locally perched water tables. Natural and aggravated landslide potential is high. The soils are highly mixed clay loam or silty clay loams with some cobbles and boulders. Percolation rates are slow to moderate. Infiltration rates are moderately rapid. The slope ranges from 5%-50%+ typically. Soils from the Astoria series are found in this response unit. (Soil Conservation Service)

This response unit is generally located mid-way up the slope on the north side of the Salmon River or near the top of the slope on the south side of the Salmon River. It is not uncommon to find water tolerant plants growing in this response unit, which indicates a high water table.

The vegetation of this response unit is composed of 90% or more conifer cover. Red alder is commonly found scattered throughout these stands. The response unit contains an overstory ranging from only mosses and ferns to dense shrubs, depending on the thickness of the overstory cover.

Various conifer stands may be used by 108 species of wildlife. The size of the trees, amount of the shrubs, and the abundance of dead-defective trees determine what kinds and numbers of species will be present. Flying squirrels are common when dead or defective trees are present. Red-tree mites, which depend on the needles of Douglas fir for food,are present if enough Douglas fir occurs. Large dead and defective trees provide perching sites for bald eagles and red-tailed hawks.

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	H	L	L	3	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	H	L	L	3	H
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	H	L	L	2	H
18.	*Gravelled Road	H	L	L	4	H
19.	*Paved Road	H	L	L	5	H
20.	*Septic Tank & Drainfield	H	L	L	2	H
21.	*Sewer Lines	H	L	L	3	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	H	H	L	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	M	M	M	2	L
26.	Trail	L	M	M	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

LSD-C

REASONS

1.	
2.	
3.	
4.	
5.	
6.	High water table-dense vegetative barrier
7.	
8.	
9.	
10.	
11.	Interference with subsurface water movement-potential for triggering mass soil movement
12.	
13.	
14.	Interference with surface/subsurface water movement-high water table-potential for mass soil movement
15.	
16.	
17.	Interference with surface/subsurface water movement-steep terrain
18.	Interference with surface/subsurface water movement-decrease in slope stability-wildlife harassment
19.	Interference with surface/subsurface water movement-decrease in slope stability-wildlife harassment
20.	Slow percolation rate-high water table-interference with subsurface water movement
21.	Decrease in slope stability, may break line-steep terrain-interference with subsurface water movement
22.	
23.	Decrease in slope stability-concentration of surface water-water quality degradation-wildlife habitat loss
24.	Difficult logging-regeneration problems-loss of wildlife habitat
25.	High water table-potential water quality degradation-soil subject to mass movement
26.	
27.	Water quality degradation
28.	Interference with surface water movement-loss of slope stability

Vegetative Removal Results in a Change of the Response Units.

30. Sedimentary Residual Heavy Clay - Grass - (SRHC-G) - This response unit is primarily found on the north side of the Salmon River mid-way up the slope and is composed of moderately deep to deep silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. It occurs on ridges and side slopes of 10% to 40%. Percolation rates are slow to moderate. Infiltration rates are moderate. Groundwater is 3' to 6' below the surface, depending on the time of year. Soils of the Fendal and Winema soil series are typically found in this response unit, as mapped by the Soil Conservation Service.

When this response unit is viewed in combination with other heavily vegetated response units, it creates variety and interest in the landscape of the Lower Slope-Dispersed Residential Subarea. Portions of this response unit are currently being used for a variety of agriculture purposes, including grazing and crop production, such as hay.

The vegetation found on this response unit is typical of upland grasslands. This community was probably created by wild fire or by intentional burning of the original vegetation and has a history of many years of livestock use. If not maintained, this response unit has the tendency to return to a mixed conifer-deciduous or a pure stand of conifer trees. Varieties of grass which may be found in this response unit are common velvet grass, Idaho bent grass, blue wild rye, sweet virale grass, red fescue, orchard grass and Alaskan brome. Scattered shrubs, such as thimbleberry, salmonberry and salal may also occur on the peripheries of this plant community. Seedlings of Sitka spruce are also established on rotten trunks of trees that have fallen into the area.

Vagrant shrews, Townsend voles, coast moles, white-crowned sparrows, red-tailed hawks and common garter snakes are among the 84 species found using the upland grass community.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	M	M	M	3	L
2.	*Boat Facilities	H	H	M	3	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	H	H	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	H	H	1	L
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	M	M	M	1	L
12.	Grazing	L	H	H	1	L
13.	Hiking (Low Concentrations)	L	H	H	2	L
14.	*Residential Housing	L	H	H	3	H
15.	Concentrated Foot Traffic	M	H	H	2	M
16.	Off Road Vehicles	M	H	M	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	M	M	5	M
20.	*Septic Tank & Drainfield	M	L	L	5	L
21.	*Sewer Lines	M	M	M	2	L
22.	Stream Channelization Facilities	H	H	L	3	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	H
26.	Trail	L	H	H	1/2	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	H	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRHC-G

REASONS

1.	
2.	Diversion of channel flow direction may cause damage on this or other response units-increased shoreline erosion
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	Interference with ground water movement-concentration of surface water-sedimentation causes degradation of estuary
19.	Interruption of ground water flow-interference with surface water-difficult construction
20.	Possible water quality degradation-slow percolation
21.	Difficult construction
22.	Diversion of channel flow direction may cause to this or other adjacent response units
23.	
24.	
25.	
26.	
27.	Potential of contamination of estuary
28.	Interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

31. Sedimentary Residual Heavy Clay - Shrub - (SRHC-S) - This response unit is primarily found on the north side of the Salmon River mid-way up the slope and is composed of moderately deep to deep sily clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. It occurs on ridges and side slopes of 10% to 40%. Percolation rates are slow to moderate. Infiltration rates are moderate. Groundwater is 3' to 6' below the surface, depending on the time of the year. Soils of the Fendal and Winema soil series are typically found in this response unit, as mapped by the Soil Conservation Service.

The principle type of vegetation on this response unit is shrub cover with a limited amount of open grassy areas. The response unit also contains small scattered deciduous and conifer trees.

This response unit is a product of invading shrubs which have overcome open grasslands.

The shrub community is used by 126 species of wildlife. All shrub communities contain many of the same shrub species and consequently are used by about the same wildlife species. Bush rabbits, yellow warblers and Steller's jays are commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	M	M	M	4	M
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	H
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	M	M	M	1	L
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	M	M	M	3	H
15.	Concentrated Foot Traffic	M	L	L	1	M
16.	Off Road Vehicles	M	L	L	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	L	L	2	M
21.	*Sewer Lines	M	M	M	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRHC-S

REASONS

1.	Drastic change in wildlife habitat
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	Forest products lacking
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	Interference with ground water movement-concentration of surface water-water quality degradation from sediment load
19.	Interference with ground water movement-concentration of surface water-water quality degradation from sediment load
20.	Potential water quality degradation-slow percolation rates
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential water quality degradation-some loss of wildlife habitat
28.	Interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

32. Sedimentary Residual Heavy Clay - Deciduous - (SRHC-D) - This response unit is primarily found on the north side of the Salmon River mid-way up the slope and is composed of moderately deep to deep silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. It occurs on ridges and side slopes of 10% to 40%. Percolation rates are slow to moderate. Infiltration rates are moderate. Groundwater is 3' to 6' below the surface, depending on the time of year. Soils of the Fendal and Winema soil series are typically found in this response unit. (mapped by the Soil Conservation Service)

The principle vegetative species of this response unit is deciduous and it is mainly composed of red alder with scattered bigleaf maple. One or more conifer species may comprise from 1% to 20% of this type of stand. The density and type of understory vegetation will vary from response unit to response unit, depending on the age of the overstory. Salmonberry, swordfern, and mosses are typically present in the understory.

As many as 106 in these deciduous stands, Wilson's warbler, ruffed grouse and Pacific jumping mouse usually occur.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	M	L	L	5	H
2.	*Boat Facilities	H	L	L	3	H
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	L	L	L	1	L
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	L	M	M	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	M	M	4	M
19.	*Paved Road	M	M	M	5	M
20.	*Septic Tank & Drainfield	M	L	L	4	H
21.	*Sewer Lines	M	M	M	3	H
22.	Stream Channelization Facilities	H	H	L	3	H
23.	*Clear Cut Timber Harvest	M	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRHC-D
REASONS

1.	
2.	Diversion of channel flow direction may cause scour or deposition on this or other response units
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	Steep bank
10.	
11.	Dense vegetation
12.	
13.	Dense vegetation
14.	
15.	Dense vegetation
16.	
17.	
18.	Interference with surface/subsurface water movement may cause water quality degradation
19.	Difficult construction-interference with surface/subsurface water movement may cause water quality degradation
20.	Slow percolation rate-potential water quality degradation
21.	
22.	Diversion of channel flow direction may cause scour or deposition on this or neighboring response units
23.	Concentration of surface water-may cause water quality degradation-loss of wildlife habitat
24.	Loss of wildlife habitat
25.	
26.	
27.	Potential water quality degradation in the estuary
28.	Interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

33. Sedimentary Residual Heavy Clay - Conifer Deciduous (SRHC-CD) - This response unit is primarily found on the north side of the Salmon River mid-way up the slope and is composed of moderately deep to deep silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. It occurs on ridges and side slopes of 10% to 40%. Percolation rates are slow to moderate. Infilqration rates are moderate. Groundwater is 3' to 6' below the surface, depending on the time of the year. Soils of the Fendal and Winema soil series are typically found in this response unit. (mapped by the Soil Conservation Service)

The overstory of this response unit contains a mixture of conifer and deciduous trees. The percentage of deciduous and conifer trees vary in the different response units, but neither dominate.

Red alder is the dominant deciduous tree with a scattering of bigleaf maple. Sitka spruce and western hemlock are the dominant conifer varieties. Scattered Douglas fir may also be found in this response unit.

These stands occur primarily on areas which were logged during the past 25 years, and have become established naturally from seeds provided from adjacent trees.

The understory vegetation varies with the age and tree density of the stands. Red elderberry and salmonberry are common shrubs. Vine maple and thimbleberry also occur in many stands. In the older stands, trees die out, allowing more sunlight to reach the forest floor and the shrub layer reaches its greatest density.

Conifer deciduous stands may be used by 120 wildlife species. The Oregon salamander, Pacific tree frog, song sparrow, Swanson's thrush, and Oregon vole are usually present.

	ACTIVITY OR USE (LAND)	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	M	L	L	5	H	
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	L	M	M	2	M	
6.	Backpack Camping	L	M	M	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	L	L	L	1	L	
10.	Gathering Forest Products	L	H	H	1	L	
11.	*Underground Utilities	M	M	M	2	M	
12.	Grazing	L	L	L	2	L	
13.	Hiking (Low Concentrations)	L	M	M	2	L	
14.	*Residential Housing	L	M	M	3	M	
15.	Concentrated Foot Traffic	M	M	M	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	L	M	M	2	M	
18.	*Gravelled Road	M	H	H	4	M	
19.	*Paved Road	M	M	M	5	M	
20.	*Septic Tank & Drainfield	M	L	L	5	H	
21.	*Sewer Lines	M	M	M	3	H	
22.	Stream Channelization Facilities	H	H	L	3	H	
23.	*Clear Cut Timber Harvest	M	H	H	5	H	
24.	Selective Timber Harvest	L	H	H	5	H	
25.	Vault Toilet	L	H	H	2	L	
26.	Trail	L	H	H	1	L	
27.	Herbicides	H	H	L	4	H	
28.	*Land Fills	M	M	M	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

SRHC-CD

REASONS

1.	Loss of wildlife habitat
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	Dense vegetation
12.	
13.	Dense vegetation
14.	
15.	Dense vegetation
16.	
17.	
18.	Interference with ground water movement-concentration of surface water-elimination of habitat and wildlife harass.
19.	Interference with ground water movement-concentration of surface water-elimination of habitat and wildlife harass.
20.	Slow percolation rate-possible water quality degradation-loss of wildlife habitat
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential water quality degradation-drastic change in wildlife habitat
28.	Interference with surface water movement results in surface erosion

Vegetative Removal Results in a Change of the Response Units.

34. Sedimentary Residual Heavy Clay - Conifer - (SRHC-C)
This response unit is primarily found on the north side of the Salmon River mid-way up the slope and is composed of moderately deep to deep silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. It occurs on ridges and side slopes of 10% to 40%. Percolation rates are slow to moderate. Infiltration rates are moderate. Groundwater is 3' to 6' below the surface, depending on the time of the year. Soils of the Fendal and Winema soil series are typically found in this response unit. (mapped by the Soil Conservation Service)

The vegetation of this response unit is comprised of 90% or more coniferous cover, with red alder commonly found scattered throughout the stands. The understory vegetation will vary depending on how solid the tree canopy is. In dense stands, only mosses and ferns occur. In more open or mixed stands, a scattering of shrubs exists.

Conifer stands are used by 106 wildlife species. Steller's jays, shrew moles, purple finches and the great horned owl frequent these conifer stands.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	L	M	M	3	M
15.	Concentrated Foot Traffic	L	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	L	L	2	H
21.	*Sewer Lines	M	M	M	3	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	2	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRHC-C
REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	Interference with surface/subsurface water movement causing possible water quality degradation from sediment
19.	Interference with surface/subsurface water movement causing possible water quality degradation from sediment
20.	Slow percolation rates-possible water quality degradation
21.	
22.	
23.	
24.	
25.	
26.	
27.	Drastic change in vegetation cover
28.	

Vegetative Removal Results in a Change of the Response Units.

35. Sedimentary Residual Light Clay - Grass - (SRLC-G) Soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface, depending on time of year. Typically, soils of the Astoria series are described in this unit (SRC). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate.)

When this response unit is combined with other heavily vegetated response units, it creates variety and interest in the landscape. Portions of this response unit are currently being used for a variety of agriculture purposes, including grazing and crop production, such as hay.

The vegetation found on this response unit is typical of upland grasslands. This community was probably created by wild fire or by intentional burning of the original vegetation and has a history of many years of livestock use. If not maintained, this unit has the tendancy to return to a mixed conifer-deciduous stand of trees or a pure stand of conifer. Varieties of grass which may be found in this response unit are common velvet grass, Idaho bent grass, blue wild rye, sweet virale grass, red fescue, orchard grass and Alaskan brome. Scattered shrubs, such as thimbleberry, salmonberry and salal may also occur on the peripheries of this plant community.

This upland grass community receives use by 84 wildlife species. The American goldfinch, California ground squirrel, coyote, sparrow hawk, and golden-crowned sparrow is often present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	M	M	M	3	L
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	H	H	2	H
6.	Backpack Camping	L	H	H	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	M	M	M	2	L
12.	Grazing	L	H	H	1	L
13.	Hiking (Low Concentrations)	L	H	H	1	L
14.	*Residential Housing	L	H	H	3	H
15.	Concentrated Foot Traffic	M	H	H	2	M
16.	Off Road Vehicles	M	H	M	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	L	H	H	3	M
19.	*Paved Road	L	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	L
21.	*Sewer Lines	M	M	M	2	L
22.	Stream Channelization Facilities	H	H	L	3	H
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	H
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	4	H
28.	*Land Fills	M	H	H	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-G

REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	Excessive slopes-only 3' to bedrock
12.	
13.	
14.	
15.	Some soil compaction
16.	
17.	
18.	Interference with surface/subsurface water movement, causing potential water quality degradation from sediment
19.	Interference with surface/subsurface water movement, causing potential water quality degradation from sediment
20.	Steep slopes-shallow depth to bedrock
21.	Difficult construction
22.	
23.	
24.	
25.	
26.	
27.	Possible water quality degradation
28.	Interference with surface water movement results in surface erosion

Vegetative Removal Results in a Change of the Response Units.

36. Sedimentary Residual Light Clay - Shrub - (SRLC-S)
The soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface, depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate.)

The principal type of vegetation on this response unit is shrub cover with some open grassy areas. The response unit also contains scattered deciduous and conifer trees. Principal shrub species present are blackberry and thimbleberry, with elderberry growing in the wetter sites.

This response unit is a product of invading vegetation which has overcome open grasslands.

Shrub communities are used by 126 species of wildlife. Robins, song sparrows, rufous sided towhees, brush rabbits and deermice are common residents of the shrub community.

	LAND / ACTIVITY OR USE	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	M	M	M	4	M
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	H
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	M	M	M	2	L
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	L	M	M	3	H
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	M	L	L	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	M
21.	*Sewer Lines	M	M	M	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-S

REASONS

1.	
2.	
3.	
4.	
5.	Steep terrain
6.	Dense vegetation
7.	
8.	
9.	
10.	Few forest products
11.	
12.	
13.	Dense vegetation
14.	
15.	Some soil compaction-dense vegetation
16.	
17.	
18.	Interference with surface/subsurface water movement-possible water quality degradation from sediment
19.	Interference with surface/subsurface water movement-possible water quality degradation-difficult construction
20.	Steep terrain
21.	
22.	
23.	
24.	
25.	
26.	
27.	Possible water quality degradation-loss of wildlife habitat
28.	Interference with surface water movement results in surface erosion

Vegetative Removal Results in a Change of the Response Units.

37. Sedimentary Residual Light Clay - Shrub - 1 (SRLC-S-1) The soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface, depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate).

The shrub cover of this response unit is a direct result of recent logging activities. Shrubs which are commonly found in this unit are salal, huckleberry, elderberry, blackberry, and fern. The more sun tolerant species eventually crowd out the shade loving plants. Seedling sized conifer and deciduous trees also exist in this unit.

This response unit is used by 126 wildlife species. Western red-backed salamanders are common in decaying logs. Townsend chipmunks use some logs for cover. Mountain quail and ruffed grouse use these areas heavily when they have young because of the numerous insects available.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	M	M	M	2	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2	M
16.	Off Road Vehicles	M	L	L	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	M
21.	*Sewer Lines	M	M	M	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	M
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-S-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	Unit lacking forest products
11.	Steep terrain
12.	
13.	
14.	
15.	Some soil compaction-damage of vegetation
16.	
17.	
18.	Interference with surface/subsurface water movement resulting in water quality degradation
19.	Interference with surface/subsurface water movement resulting in water quality degradation-difficult construction
20.	Steep terrain
21.	
22.	
23.	
24.	
25.	
26.	
27.	Possible water quality degradation
28.	Surface erosion caused by interference water movement

Vegetative Removal Results in a Change of the Response Units.

38. Sedimentary Residual Light Clay - Deciduous - (SRLC-D) - The soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface, depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate)

The principal vegetative species of this response unit is deciduous, and is mainly composed of red alder with scattered bigleaf maple. One or more conifer species may comprise from 1% to 20% of this type of stand. The density and type of understory vegetation will vary from response unit to response unit, depending on the age of the overstory. However, salmonberry, swordfern and mosses are typically present.

Deciduous stands are used by 108 species of wildlife. Mountain beaver, Pacific jumping mouse, marsh shrew and Western flycatcher are often present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	M	L	L	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	L	M	M	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	H
21.	*Sewer Lines	M	M	M	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	5	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-D

REASONS

1.	Drastic change in wildlife habitat
2.	
3.	
4.	
5.	Steep terrain
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	
12.	
13.	Dense vegetation
14.	
15.	Some soil compaction-dense vegetation causes trailing
16.	
17.	
18.	Interference with surface/subsurface water movement, creating silting problems
19.	Interference with surface/subsurface water movement, creating silting problems-difficult construction-wildlife har.
20.	Steep terrain
21.	
22.	
23.	Loss of wildlife habitat
24.	Loss of wildlife habitat
25.	
26.	
27.	Possible water quality degradation
28.	Interference with surface water movement-potential surface erosion

Vegetative Removal Results in a Change of the Response Units.

39. Sedimentary Residual Light Clay - Conifer Deciduous - (SRLC-CD) - The soils of this response unit are composed of moderately deep to deep silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface, depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate).

This response unit contains a mixture of conifer and deciduous trees. The percentage of deciduous and conifer trees vary in the different areas, but neither dominate.

Red alder is the dominant deciduous tree with some scattered bigleaf maple. Sitka spruce and western hemlock are the dominant conifer varieties. Scattered Douglas fir may also be found in this response unit.

These stands occur primarily on areas which were logged during the past 25 years, and are established naturally from seeds provided from adjacent stands.

The understory vegetation varies according to the overstory density but red elderberry and salmonberry are commonly found. Vine maple and thimbleberry also occur in many stands. In the older stands, trees die out, allowing more sunlight to reach the forest floor and the shrub layer reaches its greatest density.

Mixed stands of trees usually are used by 120 species of wildlife. Wilson's warblers, olive-sided flycatchers, are often present.

	LAND ACTIVITY OR USE	SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	M	L	L	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	L	M	M	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	H
21.	*Sewer Lines	M	M	M	3	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	2	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-CD

REASONS

1.	Destruction of existing wildlife habitat
2.	
3.	
4.	
5.	Steep terrain
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	Dense vegetation
12.	
13.	
14.	Steep terrain
15.	Some soil compaction
16.	
17.	
18.	Alteration of surface/subsurface water movement may create water quality degradation
19.	Alteration of surface/subsurface water movement may create water quality degradation-difficult construction
20.	Steep terrain
21.	
22.	
23.	Loss of wildlife habitat
24.	Loss of wildlife habitat
25.	
26.	
27.	Possible water quality degradation
28.	Surface erosion may be caused by interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

40. Sedimentary Residual Light Clay - Conifer - 1 (SRLC-C-1) - The soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC. The percolation rate is the main difference between the two, with SRHC having slower percolation rates than SRLC.

This response unit is a direct result of logging activities. A young conifer stand of trees, approximately 15 years old, has been established through a combination of natural seeding and planting. Conifer present are Sitka spruce, which dominate, Douglas fir, and hemlock. This dense conifer stand acts as a physical barrier to cross-country walking.

A young conifer stand may be used by 66 wildlife species. The rough-skinned newt, deermouse, Steller's jay, song sparrow and rufous-sided towhee are usually present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	1	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	L	L	L	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	H
21.	*Sewer Lines	M	M	M	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	3	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-C-1

REASONS

1.	Dense vegetation
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	Lacking forest products
11.	Steep terrain
12.	
13.	
14.	
15.	Some soil compaction
16.	
17.	
18.	Interference with surface/subsurface water may cause siltation in surface water
19.	Interference with surface/subsurface water may cause siltation in surface water-difficult construction-wildlife har.
20.	Steep terrain
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential water quality degradation-loss of equatic plants
28.	Erosion may occur as a result of interfering with surface water movement

Vegetative Removal Results in a Change of the Response Units.

41. Sedimentary Residual Light Clay - Conifer - (SRLC-C) - The soils of this response unit are composed of moderately deep to deep, silty clay or silty clay loam soils over highly weathered and intensely fractured interbedded sandstones and siltstones. The response unit occurs on ridges and side slopes above the flood plain with gently to moderately steep slopes (10% to 35% gradient). Infiltration and percolation rates are moderate to moderately rapid. Groundwater is 3 to greater than 6 feet below the surface depending on time of year. Typically, soils of the Astoria series are described in this unit (SCS). The soils and geology characteristics of this response unit are similar to SRHC, the percolation rate is the main difference between the two. (SRHC has a slower rate)

The vegetation of this response unit is comprised of 90% or more coniferous cover. Red alder is commonly found scattered throughout the stands. The understory vegetation will vary depending on how solid the tree canopy is. In dense stands, only mosses and ferns will dominate. In more open or mixed stands, a scattering of shrubs will exist.

The various conifer stands of this response unit are used by 108 wildlife species. In older stands, the gray jay, the pileated woodpecker and the hairy woodpecker are common. Sharp-shinned hawks frequent conifer stands of intermediate age. Winter wrens and chickarees are in most conifer stands.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	M	L	L	5	H
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	L	M	M	2	M
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	1	L
11.	*Underground Utilities	M	M	M	2	M
12.	Grazing	L	L	L	2	L
13.	Hiking (Low Concentrations)	L	M	M	2	L
14.	*Residential Housing	L	M	M	3	M
15.	Concentrated Foot Traffic	M	M	M	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	M	H	H	3	M
19.	*Paved Road	M	M	M	4	M
20.	*Septic Tank & Drainfield	M	M	M	2	H
21.	*Sewer Lines	M	M	M	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	H	H	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	H	L	2	H
28.	*Land Fills	M	M	M	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

SRLC-C

REASONS

1.	Steep terrain-drastic change in wildlife habitat
2.	
3.	
4.	
5.	Steep terrain
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	Steep terrain
15.	Some soil compaction
16.	
17.	
18.	Interference with surface/subsurface water creating potential for water quality degradation
19.	Interference with surface/subsurface water creating potential for water quality degradation-difficult construction
20.	Steep terrain
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential of contamination of surface water which affects aquatic plant life
28.	Interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

42. Seacliffs and Rubble - Barren - (SCAR-B) - Wave erosion at the toes of steep, basaltic cliffs has caused large landslides of rock and soil debris to be deposited at the ocean's edge. These areas have three distinct land forms. The headwall from which the slide originated is steep (100%+) and smooth. The foot of the slide lies below this steep wall and is comprised of consolidated rock and soil debris shaped like disoriented heaps and mounds. The toe of SCAR is usually a gentle convex debris out-flow that has been partially eroded by waves, and may be eroded to the point that only a flat rocky beach remains. Erosion of the toe of the slope will cause additional failure of headwalls in the future.

The majority of the coastline within the Scenic-Research Area is classified as SCAR. The vertical cliffs of this response unit provide variety and interest to the coastline.

SCAR-B, for the most part, is composed of rubble and cliffs with very little or no vegetation occuring. Portions of this response unit may be subject to periodic flooding during heavy storms by ocean wave action.

This response unit is heavily used for nesting and roosting by 6 species of shorebirds. Cormorants, Western gulls and pidgeon quillmots are commonly found on this unit.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL		
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	3	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	3	L	
11.	*Underground Utilities	NA					
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	5	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	NA					
16.	Off Road Vehicles	NA					
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	NA					
22.	Stream Channelization Facilities	H	L	L	5	H	
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	NA					
26.	Trail	L	L	L	5	L	
27.	Herbicides	NA					
28.	*Land Fills	NA					

*Sensitivity Rating Reflects Only Soil Conditions.

SCAR-B

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Steep rugged terrain-harassment of nesting shorebirds
7.	
8.	
9.	
10.	Forest products lacking-steep terrain-harassment of nesting shorebirds
11.	
12.	
13.	Forest products lacking-steep terrain-harassment of nesting shorebirds
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	Diversion of channel flow affects this and other response units-loss of wildlife habitat-harassment of nesting
23.	
24.	
25.	
26.	Excessive slope-rugged terrain-subject to mass movement-harassment of wildlife
27.	
28.	

Vegetative Removal Results in a Change of the Response Units.

43. Seacliffs and Rubble - Grass - (SCAR-G) - Wave erosion at the toes of steep, basaltic cliffs has caused large landslides of rock and soil debris to be deposited at the ocean's edge. These areas have three distinct land forms. The headwall from which the slide originated is steep (100%+) and smooth. The foot of the slide lies below this steep wall and is comprised of unconsolidated rock and soil debris shaped like disoriented heaps and mounds. The toe of SCAR is usually a gentle convex debris out-flow that has been partially eroded by waves, and may be eroded to the point that only a flat rocky beach remains. Erosion of the toe of the slope will cause additional failure of headwalls in the future.

The majority of the coastline within the Scenic-Research Area is classified as SCAR. When this response unit is combined with other heavily vegetated response units, variety and interest in the landscape occurs.

The vegetation found on this response unit is typical of upland grasslands. This community was probably created by wild fire. Varieties of grass which may be found in this response unit are common velvet grass, Idaho bent grass, blue wild rye, red fescue, orchard grass and Alaskan brome. Scattered shrubs, such as thimbleberry, salmonberry and salal may also occur on the peripheries of this plant community. In addition, seedlings of Sitka spruce are also established in rotten trunks of trees that have fallen into the area, but because of the extreme weather conditions, they will be deformed.

The upland grasses of this plant community are usually frequented by 84 species of wildlife. However, the steep slopes on which these grasses occur reduce both the numbers of animals and amount of use that might be expected. Deermice, song sparrows, and sparrow hawks are often present on this response unit.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	3	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	3	L
11.	*Underground Utilities	NA				
12.	Grazing	L	L	L	3	L
13.	Hiking (Low Concentrations)	M	L	L	5	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	NA				
16.	Off Road Vehicles	NA				
17.	*Parking Lot	NA				
18.	*Gravelled Road	NA				
19.	*Paved Road	NA				
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	NA				
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	NA				
26.	Trail	L	L	L	5	L
27.	Herbicides	H	L	L	4	H
28.	*Land Fills	NA				

*Sensitivity Rating Reflects Only Soil Conditions.

SCAR-G
REASONS

1.	
2.	
3.	
4.	
5.	
6.	Steep terrain-bad weather conditions-wildlife harassment on this and adjacent units
7.	
8.	
9.	
10.	Forest products lacking-harassment of wildlife on this and adjacent units
11.	
12.	Wildlife harassment on this and adjacent units
13.	Steep terrain-wildlife harassment
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
26.	Excessive slope-subject to mass movement-wildlife harassment
27.	Alteration of existing plant community-destruction of wildlife habitat
28.	

Vegetative Removal Results in a Change of the Response Units.

44.. Seacliffs and Rubble - Shrub - (SCAR-S) - Wave erosion at the toes of steep, basaltic cliffs has caused large landslides of rock and soil debris to be deposited at the ocean's edge. These areas have three distinct land forms. The headwall from which the slide originated is steep (100%+) and smooth. The foot of the slide lies below this steep wall and is comprised of unconsolidated rock and soil debris shaped like disoriented heaps and mounds. The toe of SCAR is usually a gentle convex debris out-flow that has been partially eroded by waves, and may be eroded to the point that only a flat rocky beach remains. Erosion of the toe of the slope will cause additional failure of headwalls in the future.

The majority of the coastline within the Scenic-Research Area is classified as SCAR.

The principal type of vegetation on this response unit is shrub cover with a limited amount of open grassy areas and is a product of invading vegetation which has overcome open grasslands. The shrubs and scattered deciduous and conifer trees are generally deformed by wind.

Shrub species commonly found are salal and thimbleberry. This salal dominated plant community is used by 14 species of wildlife. The lack of plant diversity results in a lack of animal diversity. Song sparrows and deermice are commonly present.

	ACTIVITY OR USE	LAND					
		SENSITIVITY	CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	3	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	3	L	
11.	*Underground Utilities	NA					
12.	Grazing	L	L	L	3	L	
13.	Hiking (Low Concentrations)	L	L	L	5	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	NA					
16.	Off Road Vehicles	NA					
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	NA					
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	NA					
26.	Trail	L	L	L	5	L	
27.	Herbicides	NA					
28.	*Land Fills	NA					

*Sensitivity Rating Reflects Only Soil Conditions.

SCAR-S

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Bad weather conditions-harassment of wildlife on this and adjacent response units
7.	
8.	
9.	
10.	Limited numbers of forest products-wildlife harassment
11.	
12.	Little available forage-wildlife harassment on this and adjacent response units
13.	Steep rugged terrain-extreme wildlife harassment
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
26.	Excessive slope-rugged terrain-subject to mass movement-wildlife harassment
27.	
28.	

Vegetative Removal Results in a Change of the Response Units

45. Seacliffs and Rubble - Deciduous - (SCAR-D) - Wave erosion at the toes of steep, basaltic cliffs has caused large landslides of rock and soil debris to be deposited at the ocean's edge. These areas have three distinct land forms. The headwall from which the slide originated is steep (100%+) and smooth. The foot of the slide lies below this steep wall and is comprised of unconsolidated rock and soil debris shaped like disoriented heaps and mounds. The toe of SCAR is usually a gentle convex debris outflow that has been partially eroded by waves, and may be eroded to the point that only a flat rocky beach remains. Erosion of the toe of the slope will cause additional failure of headwalls in the future.

The majority of the coastline within the Scenic-Research Area is classified as SCAR.

The principal vegetative species of this response unit is deciduous and it is mainly composed of red alder. One or more conifer species may comprise from 1% to 20% of this type of deciduous stand. The density and type of understory vegetation will vary from area to area, depending on the age of the overstory. However, salmonberry, swordfern and mosses are typically present.

A typical example of this response unit is the bottom of the large landslide area just north of the Cascade Head pinnacle.

The young stands of deciduous trees of this response unit are used by 71 wildlife species. The common bushtit, Wilson's warbler, marsh shrew and Olympic salamander are often present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL		
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	3	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	3	L	
11.	*Underground Utilities	NA					
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	5	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	NA					
16.	Off Road Vehicles	NA					
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	NA					
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	NA					
26.	Trail	L	L	L	5	L	
27.	Herbicides	NA					
28.	*Land Fills	NA					

*Sensitivity Rating Reflects Only Soil Conditions.

SCAR-D

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Steep uneven terrain-harassment of wildlife on this and adjacent units
7.	
8.	
9.	
10.	Limited forest products available - poor access-wildlife harassment
11.	
12.	
13.	Poor access-steep terrain-harassment of wildlife on this and adjacent response units
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
26.	Excessive slope-subject to mass movement-wildlife harassment
27.	
28.	

Vegetative Removal Results in a Change of the Response Units.

46. Seacliffs and Rubble - Conifer - (SCAR-C) - Wave erosion at the toes of steep, basaltic cliffs has caused large landslides of rock and soil debris to be deposited at the ocean's edge. These areas have three distinct land forms. The headwall from which the slide originated is steep (100%+) and smooth. The foot of the slide lies below this steep wall and is comprised of unconsolidated rock and soil debris shaped like disoriented heaps and mounds. The toe of SCAR is usually a gentle convex debris out-flow that has been partially eroded by waves and may be eroded to the point that only a flat rocky beach remains. Erosion of the toe of the slope will cause additional failure of headwalls in the future.

The majority of the coastline within the Scenic-Research Area is classified as SCAR.

The vegetative cover of this response unit is comprised of 90% or more coniferous cover. Red alder is commonly found scattered throughout these stands. The understory vegetation will vary depending on how solid the tree canopy is. In dense stands of spruce, only mosses and ferns will occur. In more open or mixed stands, a scattering of shrubs will exist.

Many of the overstory trees of this response unit have had the tops broken or have been deformed by the constant on-shore winds.

Conifer stands may be used by 108 species of wildlife, depending on the age of the stand. In older stands, dead trees provide perching sites for hawks and bald eagles. Most of the stands in this response unit are relatively young. Steller's jays and darkeyed juncos are usually present.

	ACTIVITY OR USE	LAND			WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
		SENSITIVITY	CAPABILITY	SUITABILITY			
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	4	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	4	L	
11.	*Underground Utilities	NA					
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	5	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	NA					
16.	Off Road Vehicles	NA					
17.	*Parking Lot	NA					
18.	*Gravelled Road	NA					
19.	*Paved Road	NA					
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	NA					
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	H	L	L	5	H	
24.	Selective Timber Harvest	H	L	L	5	H	
25.	Vault Toilet	NA					
26.	Trail	L	L	L	5	L	
27.	Herbicides	NA					
28.	*Land Fills	NA					

*Sensitivity Rating Reflects Only Soil Conditions.

SCAR-C

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Bad weather conditions-steep terrain-wildlife harassment in this and adjacent habitats
7.	
8.	
9.	
10.	Steep terrain-harassment of wildlife in a key habitat
11.	
12.	
13.	Steep terrain-harassment of wildlife in a key habitat
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	Excessive slope-subject to mass movement-interference with surface/subsurface water-key wildlife habitat
24.	Excessive slope-subject to mass movement-interference with surface/subsurface water-key wildlife habitat
25.	
26.	Excessive slope-subject to mass movement
27.	
28.	

Vegetative Removal Results in a Change of the Response Units.

47. Basalt, Steep Dissected Ridges - Shrub - 1 (BSDR-S-1) The soil of this response unit is composed of moderately deep to very deep gravelly clay loam soils over basalt. The land is typically very steep and highly dissected with both angular and flat ridgetops. Faulting and past landsliding have formed the present landscape. Areas of recent debris flow landslides are evident where channel bottoms have been scoured out. Slopes range from 5% to greater than 75%. Groundwater is greater than 6 feet below the surface except in channel bottoms and steep toe-slopes where it may surface during intense storm runoff. Infiltration rates are rapid; percolation rates are moderate. Soils of the Skinner and Desolation soil series have formed in this response unit. (SCS)

Examples of this response unit can be found in the northern one-third of the Scenic-Research Area.

The shrub cover of this response unit is a direct result of recent logging activities. Shrubs which are commonly found in this area are salal, huckleberry, elderberry, and some swordfern. Seedling sized conifer and deciduous also exist in this unit.

This shrub community is currently used by 126 species of wildlife. Band-tailed pidgeons, song sparrows, snow-shoe hares, common garter snakes and bush rabbits are typically present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	L	L	2	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2	M
16.	Off Road Vehicles	L	L	L	3	M
17.	*Parking Lot	L	M	M	2	M
18.	*Gravelled Road	H	M	M	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	L	L	L	2	M
21.	*Sewer Lines	M	L	L	2	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	M	M	2	M
26.	Trail	L	M	M	1	L
27.	Herbicides	M	M	M	3	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BSDR-S-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	Steep slope-highly dissected
12.	
13.	
14.	
15.	
16.	Steep slope-highly dissected-harassment of wildlife
17.	
18.	Steep slope
19.	Steep slope
20.	Steep slope
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential ground water pollution
28.	Decrease in slope stability-potential water quality degradation-steep slope

Vegetative Removal Results in a Change of the Response Units.

48. Basalt, Steep Dissected Ridges - Deciduous - (BSDR-D) The soil of this response unit is composed of moderately deep to very deep gravelly clay loam soils over basalt. The land is typically very steep and highly dissected with both angular and flat ridgetops. Faulting and past landsliding have formed the present landscape. Areas of recent debris flow landslides are evident where channel bottoms have been scoured out. Slopes range from 5% to greater than 75%. Groundwater is greater than 6 feet below the surface except in channel bottoms and steep toeslopes where it may surface during intense storm runoff. Infiltration rates are rapid; percolation rates are moderate. Soils of the Skinner and Desolation soil series have formed in this response unit. (SCS).

Examples of this response unit can be found in the northern one-third of the Scenic-Research Area and rarely occur in the southern portions.

The principal vegetative species of this response unit is deciduous and it is mainly composed of red alder with scattered bigleaf maple. One or more conifer species may comprise from 1% to 20% of this type of stand. The density and type of understory vegetation will vary from unit to unit, depending on the age of the overstory, but salmonberry, swordfern and mosses are typically present.

The older deciduous stands commonly found on this response unit are used by 106 species of wildlife. Golden-crowned kinglets, Wilson's warblers, mountain beavers, downy woodpeckers and Western red-backed salamanders are commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE LEVEL CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	L	L	L	2	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	L	L	L	2	M
18.	*Gravelled Road	H	M	M	3	H
19.	*Paved Road	H	L	L	4	H
20.	*Septic Tank & Drainfield	L	L	L	2	H
21.	*Sewer Lines	M	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	H	M	M	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	L	L	L	2	L
26.	Trail	L	M	M	1	L
27.	Herbicides	M	M	M	5	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BSDR-D

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Steep terrain-dense vegetation
7.	
8.	
9.	
10.	
11.	Highly dissected by drainages-excessive slope
12.	
13.	
14.	
15.	
16.	
17.	Steep terrain
18.	Steep terrain
19.	Steep terrain
20.	Steep terrain
21.	
22.	
23.	Decrease in slope stability-regeneration problems-difficult logging-change of wildlife habitat
24.	Difficult logging-change of wildlife habitat
25.	
26.	
27.	Potential ground water pollution
28.	Interference with surface water movement-erosion may increase sediment load-steep terrain

Vegetative Removal Results in a Change of the Response Units.

49. Basalt, Steep Dissected Ridges - Conifer Deciduous - (BSDR-CD) - The soil of this response unit is composed of moderately deep to very deep gravelly clay loam soils over basalt. The land is typically very steep and highly dissected with both angular and flat ridgetops. Faulting and past landsliding have formed the present landscape. Areas of recent debris flow landslides are evident where channel bottoms have been scoured out. Slopes range from 5% to greater than 75%. Groundwater is greater than 6 feet below the surface except in channel bottoms and steep toeslopes where it may surface during intense storm runoff. Infiltration rates are rapid; percolation rates are moderate. Soils of the Skinner and Desolation soil series have formed in this response unit. (SCS)

Examples of this response unit can be found in the northern one-third of the Scenic-Research Area and rarely occurs in the southern portions.

This response unit contains a mixture of conifer and deciduous trees. The percentage of deciduous and conifer trees vary in the different areas, but neither dominate.

Red alder is the dominant deciduous tree with some scattered bigleaf maple. Sitka spruce and western hemlock are the dominant conifer varieties. Scattered Douglas fir may also be found in this response unit.

The understory vegetation varies with the age and tree density of the stands. Red elderberry and salmonberry are common shrubs.

Stands of intermediate age conifer-deciduous trees are used by 120 species of wildlife. Mixed stands provide a diversity of habitats and consequently, a large number of wildlife species are present. Trowbridge shrews, rough skinned newts, Wilson's warblers, black-headed grosbeaks and darkeyed juncos are common to this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	H	H	1	L	
11.	*Underground Utilities	L	L	L	2	M	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	2	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	M	L	L	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	L	L	L	2	M	
18.	*Gravelled Road	H	M	M	3	H	
19.	*Paved Road	H	L	L	4	H	
20.	*Septic Tank & Drainfield	L	L	L	2	H	
21.	*Sewer Lines	M	L	L	3	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	H	M	M	5	H	
24.	Selective Timber Harvest	L	M	M	5	H	
25.	Vault Toilet	L	L	L	2	L	
26.	Trail	L	M	M	1	L	
27.	Herbicides	M	M	M	3	H	
28.	*Land Fills	H	L	L	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

BSDR-CD REASONS
1.
2.
3.
4.
5.
6. Steep terrain-dense vegetation
7.
8.
9.
10.
11. Steep terrain-highly dissected
12.
13.
14.
15.
16.
17.
18. Steep terrain
19. Steep terrain
20. Steep terrain
21.
22.
23. Interference with groundwater movement-decrease in slope stability-regeneration problems-difficult logging
24. Wildlife harassment
25.
26.
27. Potential for groundwater and surface water pollution
28. Decrease in slope stability-potential for water quality degradation-excessive slope

Vegetative Removal Results in a Change of the Response Units.

50. Basalt, Steep Dissected Ridges - Conifer - 1 (BSDR-C-1) - The soils of this response unit is composed of moderately deep to very deep gravelly clay loam soils over basalt. The land is typically very steep and highly dissected with both angular and flat ridgetops. Faulting and past landsliding have formed the present landscape. Areas of recent debris flow landslides are evident where channel bottoms have been scoured out. Slopes range from 5% to greater than 75%. Groundwater is greater than 6 feet below the surface except in channel bottoms and steep toeslopes where it may surface during intense storm runoff. Infiltration rates are rapid; percolation rates are moderate. Soils of the Skinner and Desolation soil series have formed in this response unit. (SCS)

The vegetation of this response unit is a direct result of logging activities. A young conifer stand of trees, approximately 15 years old, has been established through natural seeding and planting. Common varieties of conifer present are Sitka spruce, which dominate, Douglas fir, and hemlock. This dense conifer stand acts as a physical barrier to cross-country walking.

Examples of this response unit can be found in the northern one-third of the Scenic-Research Area.

These young conifer stands are used by 66 species of wildlife. Rufous-sided towhees, song sparrows, snowshoe hares, bush rabbits, and box sparrows are commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE LEVEL SUITABILITY		VISUAL TOLERANCE LEVEL CAPABILITY	SUITABILITY	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	L	L	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	L	L	1	L	
11.	*Underground Utilities	L	L	L	1	M	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	2	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	M	L	L	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	L	M	M	2	M	
18.	*Gravelled Road	H	M	M	3	H	
19.	*Paved Road	H	L	L	4	H	
20.	*Septic Tank & Drainfield	L	L	L	2	H	
21.	*Sewer Lines	M	L	L	2	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	NA					
24.	Selective Timber Harvest	NA					
25.	Vault Toilet	L	M	M	2	L	
26.	Trail	L	M	M	1	L	
27.	Herbicides	M	M	M	3	H	
28.	*Land Fills	H	L	L	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

BSDR-C-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	Forest products lacking
11.	Steep terrain-highly dissected
12.	
13.	Dense vegetation
14.	
15.	Dense vegetation
16.	
17.	Steep terrain
18.	Steep terrain
19.	Steep terrain
20.	Steep terrain
21.	
22.	
23.	
24.	
25.	
26.	
27.	Potential groundwater pollution
28.	Steep terrain-dense vegetation

Vegetative Removal Results in a Change of the Response Units.

51. Basalt, Steep Dissected Ridges - Conifer - (BSDR-C) - The soil of this response unit is composed of moderately deep to very deep gravelly clay loam soils over basalt. The land is typically very steep and highly dissected with both angular and flat ridgetops. Faulting and past landsliding have formed the present landscape. Areas of recent debris flow landslides are evident where channel bottoms have been scoured out. Slopes range from 5% to greater than 75%. Groundwater is greater than 6 feet below the surface except in channel bottoms and steep toeslopes where it may surface during intense storm runoff. Infiltration rates are rapid; percolation rates are moderate. Soils of the Skinner and Desolation soil series have formed in this response unit. (SCS)

Examples of this response unit can be found in the northern one-third of the Scenic-Research Area and rarely occurs in the southern portions.

The vegetative cover of this response unit is comprised of 90% or more coniferous cover. Red alder is commonly found scattered throughout these stands. The understory vegetation varies depending on how solid the tree canopy is. In dense stands of spruce, only mosses and ferns will occur. In more open or mixed stands, a scattering of shrubs exist.

There are as high as 108 species of wildlife present in conifer stands. Gray jays, red crossbills, hermit warblers, and pipe siskins are typical users of these stands.

	ACTIVITY OR USE	LAND SENSITIVITY	WILDLIFE TOLERANCE CAPABILITY	VISUAL TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	WILDLIFE TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	M	M	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	H	H	1	L	
11.	*Underground Utilities	L	L	L	2	M	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	2	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	M	L	L	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	L	M	M	2	M	
18.	*Gravelled Road	H	M	M	3	H	
19.	*Paved Road	H	L	L	4	H	
20.	*Septic Tank & Drainfield	L	L	L	2	H	
21.	*Sewer Lines	M	L	L	2	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	H	M	M	5	H	
24.	Selective Timber Harvest	L	M	M	5	H	
25.	Vault Toilet	L	M	M	2	L	
26.	Trail	L	M	M	1	L	
27.	Herbicides	M	M	M	2	H	
28.	*Land Fills	H	L	L	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

BSDR-C

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	Highly dissected-steep terrain
12.	
13.	Highly dissected-steep terrain
14.	
15.	Highly dissected-steep terrain
16.	
17.	Steep terrain-
18.	Steep terrain
19.	Steep terrain
20.	Steep terrain
21.	
22.	
23.	Decrease in slope stability-interference with surface/subsurface water-regeneration problems-wildlife habitat alt.
24.	Loss of wildlife habitat
25.	
26.	
27.	Potential groundwater pollution
28.	Interference with surface water may cause degradation of water quality-slope

Vegetative Removal Results in a Change of the Response Units.

52. Basalt, Broad Smooth Ridges - Grass - (BBSR-G) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper sideslope or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

When this response unit is combined with other heavily vegetated response units, variety and interest in the landscape is created. Portions of this response unit are currently being used for grazing.

The vegetation found on this response unit is typical of upland grasslands. This community was probably created by wild fire or by intentional burning of the original vegetation. Varieties of grass which may be found in this response unit are common velvet grass, Idaho bent grass, blue wild rye, sweet virale grass, red fescue, orchard grass and Alaskan brome. Scattered shrubs, such as thimbleberr, salmonberry and salal may also occur on the peripheries of this plant community. A good example of this response unit is found on the pinnacle of Cascade Head.

Upland grasses are used by 84 species of wildlife. Sparrow hawks, coyotes, Townsend voles, American goldfinches and red-tailed hawks are commonly present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	M	M	1	L
12.	Grazing	L	M	M	1	L
13.	Hiking (Low Concentrations)	L	H	H	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	H	M	2	M
16.	Off Road Vehicles	M	M	M	3	M
17.	*Parking Lot	M	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	L	L	4	M
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	M	L	L	2	L
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	H
26.	Trail	L	M	M	1	L
27.	Herbicides	H	M	L	2	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-G

REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	Forest products lacking
11.	
12.	
13.	
14.	
15.	
16.	
17.	Decrease in slope stability-interference with groundwater movement
18.	Interference with surface water movement may result in erosion-difficult construction-steep terrain
19.	Interference with surface water movement may result in erosion-difficult construction-steep terrain-wildlife harass.
20.	
21.	Interference with groundwater movement changes plant community and decreases slope stability
22.	
23.	
24.	
25.	
26.	
27.	Possible water quality degradation-wind problems-slope problems
28.	Steep slope

Vegetative Removal Results in a Change of the Response Units.

53. Basalt, Broad Smooth Ridges - Shrubs - (BBSR-S) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper sideslope or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

The principal type of vegetation on this response unit is shrub cover with a limited amount of open grassy areas.

This response unit is a product of invading vegetation which has overcome open grasslands. Typical shrubs present are salal, blackberry and elderberry. Scattered deciduous and conifer trees are also present.

This shrub community is used by 120 species of wildlife. Bush rabbits, song sparrows, yellow warblers and orange-crowned warblers are commonly seen in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE LEVEL SUITABILITY	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	3	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	3	L
11.	*Underground Utilities	L	L	L	3	L
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	5	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	5	M
16.	Off Road Vehicles	M	L	L	5	M
17.	*Parking Lot	M	M	M	2	M
18.	*Gravelled Road	M	M	M	5	M
19.	*Paved Road	M	L	L	5	M
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	M	L	L	3	M
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	M
26.	Trail	L	H	H	5	L
27.	Herbicides	H	M	L	5	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-S

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense vegetation
7.	
8.	
9.	
10.	
11.	
12.	
13.	Dense vegetation-steep slope
14.	
15.	Dense vegetation-steep slope-wildlife harassment
16.	Wildlife harassment
17.	Interference with groundwater movement may decrease slope stability
18.	Interference with surface/subsurface water-difficult construction-loss of wildlife habitat
19.	Interference with surface/subsurface water-difficult construction-loss of wildlife habitat
20.	
21.	Potential water quality degradation-interference with groundwater movement-steep slope-highly dissected
22.	
23.	
24.	
25.	
26.	Wildlife harassment
27.	Steep slope-high winds-possible water quality degradation
28.	Steep slopes

Vegetative Removal Results in a Change of the Response Units.

54. Basalt, Broad Smooth Ridges - Deciduous - (BBSR-D) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper side slope or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

The principal vegetative species of this response unit is deciduous and it is mainly composed of red alder with scattered bigleaf maple. One or more conifer species may comprise from 1% to 20% of this type of deciduous stand. The density and type of understory vegetation will vary from response unit to response unit, depending on the age of the overstory. However, salmonberry, swordfern and mosses are typically present.

Deciduous stands may be frequented by 106 species of wildlife. Ruffed grouse, Wilson's warbler, Yaquina shrews and black-headed grosbeaks are common in these stands.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	WILDLIFE TOLERANCE SUITABILITY	VISUAL TOLERANCE LEVEL	VISUAL SUITABILITY
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	M	M	3	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	M	M	2	L
11.	*Underground Utilities	L	L	L	3	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	5	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	5	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	M	M	M	2	M
18.	*Gravelled Road	M	M	M	5	M
19.	*Paved Road	M	L	L	5	M
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	M	L	L	3	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	5	L
27.	Herbicides	H	M	L	5	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-D

REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	Steep terrain-dense vegetation-wildlife harassment
14.	
15.	Steep terrain-dense vegetation-wildlife harassment
16.	
17.	Interference with groundwater movement may decrease slope stability
18.	Interference with surface/subsurface water-may cause water quality degradation-wildlife harassment-
19.	Interference with surface/subsurface water-may cause water quality degradation-wildlife harassment
20.	
21.	Interference with subsurface water movement-slope stability-steep terrain
22.	
23.	Destruction of wildlife habitat
24.	Destruction of wildlife habitat-difficult logging
25.	
26.	Wildlife harassment
27.	Potential water quality degradation-problems with slope and wind-destruction of wildlife habitat
28.	Interference with surface water movement-steep terrain

Vegetative Removal Results in a Change of the Response Units.

55. Basalt, Broad Smooth Ridges - Conifer Deciduous - (BBSR-CD) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper sideslope or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

This response unit contains a mixture of conifer and deciduous trees. The percentage of deciduous and conifer trees vary in the different areas, however, neither dominate.

Red alder is the dominant deciduous tree with a scattering of bigleaf maple. Sitka spruce and western hemlock are the dominant conifer varieties.

These stands occur primarily on areas which have been burned in the past and have become established naturally from seeds provided from adjacent stands.

The understory vegetation varies with the age and tree density of the stands, but red elderberry and salmonberry are common shrubs. In the older stands, trees die out, allowing more sunlight to reach the forest floor and the shrubs reach their greatest density.

These mixed timber stands may be used by 160 species of wildlife. Chickarees, black-headed grosbeaks, orange-crowned warblers, band-tailed pidgeons and rough skinned newts are usually present.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	M	M	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	H	H	1	L
11.	*Underground Utilities	L	L	L	2	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	M	L	L	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	M	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	L	L	4	M
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	M	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	L	H	H	5	H
24.	Selective Timber Harvest	L	M	M	5	H
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	M	L	3	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-CD

REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	Steep terrain-dense vegetation
14.	
15.	Steep terrain-dense vegetation
16.	
17.	Interference with surface/subsurface water
18.	Interference with surface/subsurface water may cause water quality degradation-steep slopes-wildlife harassment
19.	Interference with surface/subsurface water may cause water quality degradation-steep slopes-wildlife harassment
20.	
21.	Interference with surface water may cause a decrease in slope stability-steep slopes-highly dissected
22.	
23.	Loss of wildlife habitat
24.	Difficult logging-loss of wildlife habitat
25.	
26.	
27.	Potential water quality degradation-wind and slope problems
28.	Steep terrain-interference with surface water movement

Vegetative Removal Results in a Change of the Response Units.

56. Basalt, Broad Smooth Ridges - Conifer - 1 - (BBSR-C-1) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper sideslope or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

This response unit is a direct result of logging activities. A young conifer stand of trees, approximately 15 years old, has been established through natural seeding and planting. Conifers commonly present are Sitka spruce, which dominate, Douglas fir, and hemlock. This dense conifer stand acts as a physical barrier to cross-country walking.

This young conifer stand is the habitat of 66 species of wildlife. Rufous-sided towhee, song sparrows, snowshoe hares and darkeyed juncos frequently can be seen in this habitat.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL
1.	*Agriculture Crops	NA				
2.	*Boat Facilities	NA				
3.	Motorized Boating	NA				
4.	Non-motorized Boating	NA				
5.	Miscellaneous Buildings	NA				
6.	Backpack Camping	L	L	L	1	L
7.	Dike Maintenance	NA				
8.	Dredging	NA				
9.	Bank or Shoreline Fishing	NA				
10.	Gathering Forest Products	L	L	L	1	L
11.	*Underground Utilities	L	L	L	1	M
12.	Grazing	NA				
13.	Hiking (Low Concentrations)	L	L	L	2	L
14.	*Residential Housing	NA				
15.	Concentrated Foot Traffic	L	L	L	2	M
16.	Off Road Vehicles	NA				
17.	*Parking Lot	M	M	M	2	M
18.	*Gravelled Road	M	M	M	3	M
19.	*Paved Road	M	L	L	4	M
20.	*Septic Tank & Drainfield	NA				
21.	*Sewer Lines	M	L	L	2	H
22.	Stream Channelization Facilities	NA				
23.	*Clear Cut Timber Harvest	NA				
24.	Selective Timber Harvest	NA				
25.	Vault Toilet	L	H	H	2	L
26.	Trail	L	H	H	1	L
27.	Herbicides	H	M	L	3	H
28.	*Land Fills	H	L	L	2	H

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-C-1

REASONS

1.	
2.	
3.	
4.	
5.	
6.	Dense barrier of vegetation
7.	
8.	
9.	
10.	Few forest products
11.	
12.	
13.	Dense vegetation-steep terrain
14.	
15.	Dense vegetation-steep terrain
16.	
17.	Decrease in slope stability because of interference with groundwater
18.	Interference with surface/subsurface water flow-steep terrain
19.	Interference with surface/subsurface water flow-steep terrain-wildlife harassment
20.	
21.	Interference with subsurface water movement may decrease slope stability and cause line failure
22.	
23.	
24.	
25.	
26.	
27.	Wind-steep terrain-possible water quality degradation
28.	Steep terrain

Vegetative Removal Results in a Change of the Response Units.

57. Basalt, Broad Smooth Ridges - Conifer - (BBSR-C) - Shallow gravelly silt loam soils and moderately deep silty clay loam soils on broad, flat to steeply convex ridges of basalt form the base for this response unit. The landform is smooth and not dissected. Bedrock is hard enough though moderately to highly fractured. Slopes range from 3% on the ridgetop to 75% on the steep upper sideslopes or lower ridge area. Groundwater is greater than 6 feet below the surface. Infiltration and percolation rates are rapid to moderately rapid. Soils of the Kilchis and Neskowin soil series were mapped by the Soil Conservation Service for this response unit.

The vegetative cover of this response unit is comprised of 90% or more coniferous cover. Red alder is commonly found scattered throughout these stands. The understory vegetation will vary depending on how solid the tree canopy is. In dense stands of spruce, only mosses and ferns will grow. In more open or mixed stands, a scattering of shrubs will exist.

Up to 108 species of wildlife are found using this conifer stand. Bald eagles and red-tailed hawks use large conifer for nesting. Flying squirrels and hairy woodpeckers are heavily dependent on dead and defective trees in the stand.

	ACTIVITY OR USE	LAND SENSITIVITY	LAND CAPABILITY	LAND SUITABILITY	WILDLIFE TOLERANCE LEVEL	VISUAL TOLERANCE LEVEL	
1.	*Agriculture Crops	NA					
2.	*Boat Facilities	NA					
3.	Motorized Boating	NA					
4.	Non-motorized Boating	NA					
5.	Miscellaneous Buildings	NA					
6.	Backpack Camping	L	M	M	1	L	
7.	Dike Maintenance	NA					
8.	Dredging	NA					
9.	Bank or Shoreline Fishing	NA					
10.	Gathering Forest Products	L	M	M	1	L	
11.	*Underground Utilities	L	L	L	2	M	
12.	Grazing	NA					
13.	Hiking (Low Concentrations)	L	L	L	2	L	
14.	*Residential Housing	NA					
15.	Concentrated Foot Traffic	M	L	L	2	M	
16.	Off Road Vehicles	NA					
17.	*Parking Lot	M	M	M	2	M	
18.	*Gravelled Road	M	M	M	3	M	
19.	*Paved Road	M	L	L	4	M	
20.	*Septic Tank & Drainfield	NA					
21.	*Sewer Lines	M	L	L	2	H	
22.	Stream Channelization Facilities	NA					
23.	*Clear Cut Timber Harvest	L	H	H	5	H	
24.	Selective Timber Harvest	L	M	M	5	H	
25.	Vault Toilet	L	H	H	2	L	
26.	Trail	L	H	H	1	L	
27.	Herbicides	H	M	L	2	H	
28.	*Land Fills	H	L	L	2	H	

*Sensitivity Rating Reflects Only Soil Conditions.

BBSR-C
REASONS

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	Steep slopes-dense vegetation
14.	
15.	Steep slopes-dense vegetation
16.	
17.	Interference with groundwater movement may decrease slope stability
18.	Steep slopes-subject to mass movement-difficult construction-harassment of wildlife
19.	Steep slopes-subject to mass movement-difficult construction-harassment of wildlife
20.	
21.	Interference with groundwater movement may decrease slope stability-steep terrain
22.	
23.	Steep terrain
24.	Difficult logging
25.	
26.	
27.	Potential water quality degradation-steep slopes-wind problems
28.	Steep terrain

Vegetative Removal Results in a Change of the Response Units

APPENDIX I

AREA MAP WITH SUBAREAS AND

OTHER FORMAL CLASSIFICATIONS DESIGNATED

APPENDIX II

RESPONSE UNIT AERIAL PHOTO

APPENDIX III

WILDLIFE DATA

Appendix

Table 1. Numbers and kinds of native wildlife species that use Cascade Head Scenic-Research Area 1/

Wildlife Groups		Number of Species	Typical Species
FISH		74	coho salmon, cutthroat trout, starry flounder, threespine stickleback
AMPHIBIANS			
Salamanders		8	Pacific giant, Oregon, Western red-backed
Frogs		3	Pacific treefrog, red-legged frog
Toads		1	Western toad
	Subtotal	12	
REPTILES			
Snakes		5	common garter snake, Northwestern garter snake
Lizards		1	Northern alligator lizard
	Subtotal	6	
BIRDS		230	common murre, tuffed puffin, song sparrow, great blue heron, screech owl
MAMMALS			
Marine		4	harbor seal, California sea lion
Terrestrial		52	black-tailed deer, chickaree, coast mole
	Subtotal	56	
TOTAL		378	

1/ Derived from Appendix Tables 7 and 9.

Appendix

Table 2. Native wildlife species eliminated from the Cascade Head Scenic-Research Area between 1850 and 1915*.

Species	Probable Occurrence	Probable Abundance
California condor	Visitor (late summer-winter)	Rare
Wolf	Resident	Rare
Sea otter	Resident	Uncommon

*Based on information compiled by Olterman and Verts (1972), and Gabrielson and Jewett (1970)

Appendix

Table 3. Exotic wildlife species introduced on the Cascade Head Scenic-Research Area from other countries or parts of the United States since 1800.

Species*	Abundance	Habitat
Starling	Very common	Pastures, meadows, early succession
English sparrow	Common	Pastures
Opossum	Rare	Riparian, early succession, meadows and pastures
Brown rat	Common	Human habitation, variety
Norway rat	Common	Human habitation
House mouse	Common	Human habitation
Bullfrog	Uncommon	Riparian (lakes, ponds, large streams)

*All are residents

Appendix

Table 4. Major wildlife habitats of the Cascade Head Scenic-Research Area

Habitat Type	Abreviation	Description
BEACHGRASS	BG	Grass-herb communities dominated by European beachgrass.
DEAD-DEFFECTIVE TREES	DD	Dead trees standing or lying on the ground; and living trees with defective parts, e.g., broken tops, heart rot ...
ESTUARY	E	The portion of a stream and its floodplain influenced by ocean tides. Includes tidal flats and saltmarsh.
FLOODPLAIN GRASSES	FG	Grasses and herbs of the floodplain plant community.
FRESH WATER MARSH	FM	A shallow body of fresh water sometimes under a canopy of trees. Maybe dry part of the year.
INTERMEDIATE CONIFER	IC	Stands dominated by conifers ranging in age from immature to mature. The C3 plant community.
INTERMEDIATE DECIDUOUS	ID	Stands dominated by deciduous trees ranging in age from immature to mature. The M3 plant community.
INTERMEDIATE MIXED	IM	Mixed stands of deciduous and coniferous trees ranging in age from immature to mature. The CM3 plant community.
OCEAN	O	The ocean within one-half mile of the mainland.
OCEAN CLIFF	C	A steep rocky cliff with the ocean at the base.
OLD GROWTH CONIFER	OC	Stands dominated by old growth conifers. The C4 and D4 plant community.
OLD DECIDUOUS	OD	Stands dominated by old deciduous trees. The M4 plant community.
OLD MIXED	OM	Stands composed of a mixture of old growth conifers and old deciduous trees. The CM4 and DM4 plant community.
OFF-SHORE ISLAND	OI	A small island in the ocean within one-half mile of the mainland. Some islands connect with the mainland at low tides.
POND	P	A small shallow body of water.
RIPARIAN	R	The vegetation adjacent to water bodies or courses.
ROCKY BEACH	RB	Ocean beach dominated by rocks or rock rubble.
SALAL SHRUB	SS	Dense thickets of salal located adjacent to the ocean.
SALT MARSH	SM	An estuary marsh subject to periodic salt water intrusion. The SM plant community.
SALT MARSH DIKED	SD	A diked estuary marsh no longer subject to salt water intrusion.
SANDY BEACH	SB	Ocean beach dominated by sand.
STREAM	ST	Streams except the estuarine portion of the Salmon River.
SHRUB	S	Shrub communities dominated by salmonberry, thimbleberry, blackberry and/or red elderberry. Includes some recent clearcuts.
TIDAL FLAT	TF	A mud or sand flat exposed at low tides.
UPLAND GRASSES	UG	Grasses and herbs of the upland grass-herb communities.
YOUNG CONIFER	YC	Stands dominated by young conifers. The C1 and C2 plant communities.
YOUNG DECIDUOUS	YD	Young stands of deciduous trees. The A2 and M2 plant communities.
YOUNG MIXED	YM	Young stands of mixed conifers and deciduous trees. The CM2 plant communities.

Appendix

Table 5. Use of major habitats by wildlife species of the Cascade Head Scenic-Research Area

Habitat	Number of Species		
	Preferred Habitat	Typical Habitat	Total
AQUATIC-SEMI-AQUATIC			
Riparian	84	27	111
Fresh water marsh	48	22	70
Pond	27	21	48
Stream	20	12	32
Ocean	47	4	51
Estuary +	77	23	100
Saltmarsh +	57	67	124
Sandy ocean beach	28	21	49
Rocky ocean beach	27	12	39
Tidal flat +	59	31	90
Ocean cliff	26	1	27
Ocean island	39	0	39
GRASSLANDS			
Saltmarsh diked	50	83	133
Floodplain grasses	41	89	130
Upland grasses	27	57	84
Beach grass	8	66	74
SHRUB			
Salal shrub	1	13	14
Shrub	69	57	126
DECIDUOUS			
Young deciduous	2	69	71
Intermediate deciduous	24	82	106
Old deciduous	25	81	106
MIXED			
Young mixed	5	72	77
Intermediate mixed	19	101	120
Old mixed	18	142	160
CONIFER			
Young conifer	6	60	66
Intermediate conifer	31	77	108
Old conifer	32	76	108
DEAD-DEFECTIVE TREES	51	30	81

+ Without duplications, the estuary system (brackish water, saltmarsh and tidal flats) is the preferred habitat of 112 species and typically used by 69 other species.

Appendix

Table 6. Endangered, rare, peripheral, and status undetermined wildlife species of Cascade Head Scenic-Research Area.

Species	Occurrence	Abundance	Status+ National	Status+ State
BIRDS				
California brown pelican	Summer visitor	Rare	E	P
American peregrine falcon	Migrant	Rare	E	E
Northern bald eagle	Resident	Rare		E
Western-snowy plover	Resident	Rare	SU	R
Western pigeon-hawk	Resident	Rare		E
Caspian tern	Migrant	Rare		R
Northern purple martin	Summer resident	Uncommon		SU
Red-necked grebe	Winter visitor	Uncommon		P
Horned grebe	Winter visitor	Common		P
Southern fork-tailed petrel	Resident	Rare		R
Aleutian Canada goose	Migrant	Rare	E	E
Ring-necked duck	Winter visitor	Uncommon		P
Lesser scaup	Winter visitor	Common		P
Barrow's goldeneye	Winter visitor	Rare		P
Bufflehead duck	Winter visitor	Common		P
Harlequin duck	Winter visitor	Rare		R
Alaskan short-billed dowitcher	Migrant	Rare	SU	SU
American marbled murrelet	Resident	Rare		SU
Rhinoceros auklet	Resident	Uncommon		SU
Common egret	Winter visitor	Uncommon		P
Western water pipit	Migrant	Rare		P
Bohemian waxwing	Winter visitor	Irregular		P
MAMMALS				
White-footed vole	Resident	Uncommon		R
Northern elephant seal	Occasional visitor	Rare	SU	R
Fringed bat	Present (unknown)	Rare		SU
Marten	Resident	Rare	SU	

*Based on U.S. Dept. of Inter. 1973; Marshall 1969; Olterman and Verts 1972.

+ See Appendix Table 10 for precise definitions of terms.

Appendix Table 7. Invertebrate animals of the Cascade Head Scenic-Research Area used directly by people.

Species	Abundance	Habitat
Mussel	Very common	Rocky cliff base or beach (tide pools)
Soft-shelled clam	Common	Mud tidal flat
Sand shrimp	Very common	Sand/mud tidal flat
Red rock crab	Uncommon	Estuary
Dungeness crab	Common	Estuary
Crayfish	Common	Streams

Appendix Table 8. A partial checklist of fish which spend all or part of their lives in the estuary and streams within the Cascade Head Scenic-Research Area.

Species (*)	Occurrance (+) Estuary	Streams
ANADROMOUS		
Pacific lamprey	X	X
American shad	X	X
Chum salmon	X	X
Coho salmon	X	X
Chinook salmon	X	X
Pink salmon	X	X
Sockeye salmon	X	X
Steelhead/Rainbow trout	X	X
Cutthroat trout	X	X
FRESH WATER		
Western brook lamprey		X
River lamprey		X
Coast Range sculpin		X
Riffle sculpin		X
Reticulate sculpin		X
Prickly sculpin	X	X
Blacksided dace	X	X
Threespine stickleback	X	X
OCEAN-ESTUARY		
Starry flounder	X	
English sole	X	
Sand sole	X	
Butter sole	X	
Pacific sanddab	X	
Shiner perch	X	
Pile perch	X	
Redtail surfperch	X	
Walleye surfperch	X	
Silver surfperch	X	
Striped seaperch	X	
White seaperch	X	
Staghorn sculpin	X	
Padded sculpin	X	
Mosshead sculpin	X	
Buffalo sculpin	X	
Tidepool sculpin	X	
Silver spotted sculpin	X	
Sharpnose sculpin	X	
Cabezon	X	
Brown Irish lord	X	
Red Irish lord	X	
Pacific herring	X	
Northern anchovy	X	
White bait smelt	X	
Surf smelt	X	
Eulachon	X	
Longfin smelt	X	
Longnose lancet	X	
Pacific tomcod	X	
Topsmelt	X	

*The presence of underlined species has been confirmed (Berry and Hasselman 1975). The other species listed are endemic to the region and may be present.

+ Underlined species are generally common. Other species are probably uncommon.

Appendix Table 8 - continued

Species*	Occurrance (+) Estuary	Streams
Jacksmelt	X	
Tubenose poacher	X	
Pricklebreast poacher	X	
High cockscomb prickleback	X	
Snake prickleback	X	
Bay pipefish	X	
Tubesnout	X	
Penpoint gunnel	X	
Saddleback gunnel	X	
Red gunnel	X	
Rockweed gunnel	X	
Arrow goby	X	
Bay goby	X	
Longnose skate	X	
Green sturgeon	X	
Wolf-eel	X	
Black rockfish	X	
Blue rockfish	X	
Cooper rockfish	X	
Bacaccio	X	
Sablefish	X	
Ling cod	X	
Kelp greenling	X	
Rock greenling	X	
Ringtail snailfish	X	
Slipskin snailfish	X	

Appendix Table 9. Occurrence, abundance and habitats of native wildlife species found on the Cascade Head Scenic-Research Area. 1/

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic: R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands: SD	FG	UG	BG	Shrub: SS	S	Deciduous: YD	ID	OD	Mixed: YM	IM	OM	Conifer: YC	IC	OC	DD
AMPHIBIANS																														
Northwestern salamander	R	U	X	X	X	X										+	+			+	+	X	X	+	X	X	+	+	X	X
Pacific giant salamander	R	C	X	X	X	X														+	+	+	+	+	+	+	+	+	X	X
Olympic salamander	R	C	X	+	+	X														+	+	+	+	+	+	+	+	+	+	X
Rough skinned newt	R	VC	X	X	X	X										+	+			X	X	X	X	X	X	X	X	X	X	X
Dunn's salamander	R	U	X																	+	+	+	+	+	+	+	+	+	+	X
Western red-backed salamander	R	VC	X																	X	+	+	+	+	+	+	+	+	+	X
Oregon salamander	R	C	X																	X	+	+	+	+	+	+	+	+	+	X
Clouded salamander	R	VC	X																	X	+	+	+	+	+	+	+	+	+	X
Western toad	R	U	X	X	X	X									X	X	+	+												
Tailed frog	R	C	X			X																								
Pacific tree frog	R	VC	X	X	X	X			+						+	+	+	+		+	+	+	+	+	+	+	+	+	+	
Red-legged frog	R	VC	X	X	X	X			+						+	+	+	+		+	+	+	+	+	+	+	+	+	+	
REPTILES																														
Rubber boa	R	R	X													X	X			+	+	+	+	+	+	+	+	+	+	+
Ringneck snake	R	R	X												+	X	X			X										+
Common garter snake	R	VC	X	X					X						+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Northwestern garter snake	R	VC							+						X	X	X	+	+	X	+	+	+	+	+	+	+	+	+	+
Gopher snake	R	R							+						X	X	X			+										+
Northern alligator lizard	R	C																	+	X	+	+	+	+	+	+	+	+	+	+

1/ Based on those sources in the literature cited identified with an asterisk.

Occurrence

R - resident; found all year; breeds on Area.
SR - summer resident; breeds on Area.
WV - winter visitor
M - migrant; spring and/or fall
I - irregular, occurs at irregular intervals.
SV - summer visitor, non-breeder
* - not known to breed on Area

Abundance

VC - very common; 25 or more animals observed z/day
C - common; 10-24 animals observed/day
U - uncommon; 1-9 animals observed/day
R - rare; 5 or less animals observed/year or over several years.

z Animals observed refers to sightings of the animals itself or its sign (calls, tracks, droppings, burrows ...)

Habitats

X - preferred habitat
+ - typical habitat

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED																														
			Aquatic - Semi-Aquatic													Grasslands				Shrub		Deciduous			Mixed				Conifer				
			R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI		SD	FG	UG	BG	SS	S	YD	ID	OD	YM	IM	OM	YC	IC	OC	DD		
MAMMALS																																	
Pocket gopher	R	R														+	+	X															
Vagrant shrew	R	VC							X							X	X	X	+		+											+	
Yaquina shrew	R	VC	X																				X	X		+	+		+	+	X		
Marsh shrew	R	C	X																				X	X		+	+		+	+	X		
Trowbridge shrew	R	VC																			X		X	X		+	+		+	+	X		
Coast mole	R	C																+			X	+	+	+	+	+	+	+	+	+			
Townsend mole	R	C														X	X	X															
Shrew mole	R	C																					+	+		+	+		+	+			
Little brown bat	R	C	X						+	+						+	+	+	+														
Fringed bat	R	U	X																													+	
California bat	R	U	+						+	+						+	+	+	+				+	+		+	+		+	+	+		
Long-legged bat	R	C	X						+	+						+	+	+	+		+												
Long-eared bat	R	U	X						+																							+	
Yuma bat	R	U	X						+	+						+	+	+	+		+											+	
Hoary bat	SR	U	+																				+	+		+	+					+	
Silver haired bat	SR	U	+																							+	+		+	+	X		
Big brown bat	R	C	X						+							+	+	+	+		+											X	
Western big-eared bat	R	C	X						+							+	+	+	+		+												
Snowshoe hare	R	VC																			X	+	+	+	+	+	+	+	+	+			
Brush rabbit	R	VC																		+	X												
Mountain beaver	R	VC																			X	+	+	+	+	+	+	+	+	+			
California ground squirrel	R	C														+	+	+	+		X												
Townsend chipmunk	R	VC																			X	+	+	+	+	+	+	+	+	+	X		
Chickaree	R	VC																					+	+		+	+		+	+	X		
Northern flying squirrel	R	C																					+	+		+	+		X	X	X		
Beaver	R	C	X	X	X	X		+																									
Deer mouse	R	VC							+							+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	X		
Bushy-tailed woodrat	R	C																			+		+	+		+	+		+	+	X		
White-footed vole	R	U	X																		+	+	+	+	+	+	+	+	+	+	+		
Red tree mouse	R	C																								+	+		X	X	+		
California red-backed vole	R	C																								+	+		X	X	X		
Townsend vole	R	VC							X							X	X	X	+		+												
Long-tailed vole	R	C	X																		X												
Oregon vole	R	VC																			X	+	+	+	+	+	+	+	+	+			
Muskrat	R	R	X	X	+	+		+	+																								
Pacific jumping mouse	R	C	X																		X					X	X				+		
Porcupine	R	R																			+	+	+	+	+	+	+	+	+	+			
Gray fox	R	R							+							+	+	+	+		+	+	+	+	+	+	+	+	+	+	+		
Coyote	R	C							+	+	+	+				+	+	+	+	+	X	+	+	+	+	+	+	+	+	+			

Appendix Table 9 cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic: R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands: SD	FG	UG	BG	Shrub: SS	S	Deciduous: YD	ID	OD	Mixed: YM	IM	OM	Conifer: YC	IC	OC	DD
MAMMALS - cont'd																														
Black bear	R	U		+	+	+			+	+	+	+			+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	X
Raccoon	R	C	X	X	X	X			X	X	X	X			+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	X
Marten	R	R																							+	+		X	X	X
Mink	R	C	X	X	X	X		X	X	X	+	+																		+
Long-tailed weasel	R	C	X																+		+	+	+	+	+	+	+	+	+	+
Short-tailed weasel	R	C	X																+		+	+	+	+	+	+	+	+	+	+
Striped skunk	R	U							X						X	X	X	+		+										
Spotted skunk	R	C																		+	+	+	+	+	+	+	+	+	+	
River otter	R	U	X	X	X	X		X																						
Mountain lion	R	U							+	+	+	+			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Bobcat	R	C							+	+	+	+			+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	+
Roosevelt elk	I	R							+						+	X	X	+		+	+	+	+	+	+	+	+	+	+	
Black-tailed deer	R	VC							+						+	X	S	+		X	+	+	+	+	+	+	+	+	+	
Harbor seal	R	C					X	X			X	X		X																
Northern sea lion	WV	R					X	+			X	X		X																
California sea lion	WV	C					X	+			X	X		X																
Elephant seal	I	R					X	+			X	X		X																
BIRDS																														
Common loon	R	C	+				X	X																						
Artic loon	WV	C	+				X	X																						
Red-throated loon	WV	U	+				X	X																						
Red-necked grebe	WV	U	+				+	X	+						+															
Horned grebe	WV	C	+				+	X	+						+															
Eared grebe	WV	U	+				+	X	+						+															
Western grebe	WV	VC	+				X	X	+						+															
Pied-billed grebe	R	U	X	X				X	X						+															
Southern fork-tailed petrel	R	R					X							X																
Leach's petrel	R	R					X	X						X																
Brown pelican	SV	R					X	X						X																
Double-crested cormorant	R	VC					X	X					X	X																
Brandt's cormorant	R	VC					X	X					X	X																
Pelagic cormorant	R	VC					X	X					X	X																
Great blue heron	R	C	X	X	X	X		X	X						+	+						+	+		+	+		X	X	
Green heron	R	R	X	X	X	X		X	X						+	+														
Common egret	WV	R	X	X	+	+		X	X						X	+														
Black-crowned night heron	R	R	X	X	X	X		X	+						+	+														

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED																														
			Aquatic - Semi-Aquatic													Grasslands				Shrub		Deciduous			Mixed			Conifer					
			R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	SD	FG	UG	BG	SS	S	YD	ID	OD	YM	IM	OM	YC	IC	OC	DD			
BIRDS - cont'd																																	
American bittern	R	R	X	X	+	X		X	X						+	+																	
Least bittern	SR	R	X	X	X			X	X						X	+																	
Whistling swan	M	U	+					X	X	X					X	+																	
Canada goose	M	U	+					X	X	X					X	+																	
Aleutian Canada goose	M	R	+					X	X	X				X	X	+																	
Black brandt	WV	U					X	X		X																							
White-fronted goose	M	R	+					X	X	X					X	+																	
Snow goose	M	R	+					X	X	X					X	+																	
Mallard	R	VC	X		X			X	X	X					X	+																	
Gadwall	WV	U	+		+			X	X	X					X	+																	
Pintail	WV	C	+		+			X	X	X					X	+																	
Cinnamon teal	M	R	+	X	+			X	X	X					X	+																	
Green-winged teal	WV	VC	X	X	X			X	X	X					X	X																	
Blue-winged teal	M	R	X	X	X			X	X	X					X	X																	
European widgeon	WV	R	X	X	X			X	X	X					X	X																	
American widgeon	WV	VC	X	X	X			X	X	X					X	X																	
Shoveler	WV	U	X	X	X			X	X	+					X	+																	
Wood duck	R	U	X	X	X			+	+	+					+	+																	X
Red head	WV	U	+	X	+			X	X	X					X	+																	
Ring-necked duck	WV	U	X	X	X			X	X	X					X	+																	
Canvasback	WV	U	X	X	+			X	X	X					X	+																	
Greater scaup	WV	U	X	X	+			X	X	X					X	+																	
Lesser scaup	WV	U	X	X	+			X	X	X					X	+																	
Common goldeneye	WV	U	X	X	X			X	X	X					X	+																	
Barrow's goldeneye	WV	U	X	X	X			X	X	X					X	+																	
Bufflehead	WV	U	X	X	X			X	X	X					X	+																	
Old squaw	WV	R	+				X	X						X																			
Harlequin duck	WV	R	+				X	X						X																			
White-winged scoter	R	VC	+				X	X																									
Surf scoter	R	VC	+				X	X																									
Common scoter	R	U	+				X	X																									
Ruddy duck	WV	U	X	X	X			X	X	X					X	+																	
Hooded merganser	R	U	X	X	+			+	+	+																							X
Common merganser	R	C	X					X	+	+																							+
Red-breasted merganser	WV	U	+				+	X	+	+																							
Turkey vulture	SR	C							X	X	X	X			X	X	X	+		X		+	+		+	+		+	+	+			
Sharp-shinned hawk	R	C							+						+	+	+	+		X	+	+	+	X	X	+	X	X	+	+			
Cooper's hawk	R	C							+						+	+	+	+		X	+	+	+	X	X	+	X	X	+	+			

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic: R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands: SD	FG	UG	BG	Shrub: SS	S	Deciduous: YD	ID	OD	Mixed: YM	IM	OM	Conifer: YC	IC	OC	DD
BIRDS - cont'd																														
Red-tailed hawk	R	C							X						X	X	X	+		X		+	+		+	+		X	X	X
Rough-legged hawk	WV	U							X						X	X	X	+												+
Bald eagle	R	R	X			X		X	+	+	X	X			+	+	+	+		+		+	+		+	+		+	X	X
Marsh hawk	R	U							X						X	X	X	+												
Peregrine hawk	WV	R						X	X	X	X	X			+	+	+	+												
Pigeon hawk	R	R							+						+	+	X	+		X		+	+	+	+	+	+	+	+	+
Sparrow hawk	R	C							X						X	X	X	X		+										X
Blue grouse	R	C															+			X	+	+	+	+	X	X	+	X	X	
Ruffed grouse	R	C															+			X	+	X	X	+	X	X	+	+	+	X
Mountain quail	R	C													+	X	X	X		X	+	+	+	+	+	+	+	+	+	
Virginia rail	R	R	X	X					X						+															
Sora rail	SR	R	X	X					X																					
Coot	R	C	X	X				X	X	X					+	+														
Black oystercatcher	R	U										X		X																
Semi-palamated plover	M	U								X	X																			
Snowy plover	R	R								+	X																			
Kildeer	R	VC							+	X	X				X	X	+	X												
American golden plover	M	R							+	X	+				+	+														
Black-bellied plover	WV	R		+					X	X					+	+														
Surfbird	WV	U										X		X																
Ruddy turnstone	M	R										X		X																
Black turnstone	WV	U										X		X																
Common snipe	R	C		X					+	+					X	X														
Long-billed curlew	M	R		X					X						+	+														
Wimbrel	M			X					X	X					+	+														
Spotted sandpiper	R	U	X			X		X		+																				
Solitary sandpiper	M	R	X			X		X		+																				
Wandering tattler	M	U										X		X																
Willet	M	R		+					X	+	+				+	+														
Greater yellowlegs	WV	U		+					X	X					+	+														
Lesser yellowlegs	M	R		+					X	X					+	+														
Knot	M	R				+				X	X				+	+														
Rock sandpiper	WV	U										X		X																
Pectoral sandpiper	M	R		+					X	X					+	+														
Baird's sandpiper	M	R								X	+																			
Least sandpiper	WV	VC		+					X	X	+																			

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED																														
			Aquatic - Semi-Aquatic													Grasslands				Shrub		Deciduous			Mixed			Conifer					
			R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	SD	FG	UG	BG	SS	S	YD	ID	OD	YM	IM	OM	YC	IC	OC	DD			
BIRDS - cont'd																																	
Dunlin	WV	U		+					+	X	X				+	+																	
Short-billed dowitcher	M	C		+					X	X					+	+																	
Alaskan Short-billed dowitcher	M	R		+					X	X					+	+																	
Long-billed dowitcher	M	C								X	+																						
Western sandpiper	M	VC								X	X				+																		
Marbled godwit	WV	R								X	X																						
Sanderling	WV	VC								+	X																						
Red phalarope	M	R		+			X	X		+	+				+	+																	
Wilson's phalarope	M	R		+			X	X		+	+				+	+																	
Northern phalarope	M	C		+			X	X		+	+				+	+																	
Glaucous gull	WV	R					X	X		X	X	X	X	X																			
Glaucous-winged gull	R	C					X	X		X	X	X	X	X																			
Western gull	R	VC					X	X		X	X	X	X	X																			
Herring gull	WV	U					X	X		X	X	X	X	X																			
California gull	R	VC					X	X		X	X	X	X	X																			
Ring-billed gull	R	U					X	X		X	X	X	X	X																			
Mew gull	WV	VC					X	X		X	X	X	X	X																			
Bonapartes gull	M	C					X	X		X	X	X	X	X																			
Heerman's gull	SV	R					X	X		X	X	X	X	X																			
Black-legged kittiwake	WV	U					X	X		X	X	X	X	X																			
Sabins gull	M	R					X	X		X	X	X	X	X																			
Forester's tern	M	R					X	X																									
Common tern	M	R					X	X																									
Arctic tern	M	R					X	X																									
Caspian tern	M	R					X	X																									
Common murre	R	VC					X	+					X	X																			
Pigeon guillemot	R	U					X	+					X	X																			
Marbled murrelet	R	U					X	+					X	X																			
Ancient murrelet	WV	R					X	+					X	X																			
Cassin's auklet	R	C					X	+					X	X																			
Rhinocero's auklet	R	R					X	+					X	X																			
Parakeet auklet	WV	R					X	+					X	X																			
Horned puffin	WV	R					X	+					X	X																			
Tufted puffin	R	U					X	T					X	X																			
Band-tailed pigeon	SR	VC								+										X	+	X	X	+	X	X	+	X	X			
Mourning dove	SR	U													X	X	X	+															
Barn owl	R	U								X					X	X	X	+															

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic: R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands: SD	FG	UG	BG	Shrub: SS	S	Deciduous: YD	ID	OD	Mixed: YM	IM	OM	Conifer: YC	IC	OC	DD
BIRDS - cont'd																														
Screech owl	R	C	+												+	+	+	+				X	X		+	+		+	+	X
Great-horned owl	R	C							+						+	+	+	+		X		+	+		+	+		+	+	+
Pigmy owl	R	C													+	+	+	+		+		+	+		+	+		+	+	X
Long-eared owl	R	R																				+	+		X	X		+	+	
Short-eared owl	R	U							X						X	X	+	+												
Saw-whet owl	R	C																				+	+		X	X		+	+	X
Common nighthawk	SR	C																X		X										
Vaux's swift	SR	R																							+	+		X	X	X
Rufous humming bird	SR	VC																		X		X	X		X	X		+	+	
Belted kingfisher	R	C	X	X	+	+		X					+																	
Common flicker	R	VC							+						+	+	+	+		+	+	+	+	+	+	+	+	+	+	X
Pileated woodpecker	R	U																		+		+	X		+	X		+	X	X
Lewis woodpecker	R	R	+												+	X	X	+		X	+	+	+	+	+	+	+	+	+	X
Yellow bellied sapsucker	R	U																		+	+	X	X	+	X	X	+	+	+	X
Hairy woodpecker	R	C																		+		+	+		+	+		X	X	X
Downy woodpecker	R	C																		+		X	X		X	X		+	+	X
Willow flycatcher	SR	U	X																	X		+	+		+	+				
Hammond's flycatcher	SR	R																		+				+	+	+	X	X	X	
Dusky flycatcher	SR	R																		X	+			+						
Western flycatcher	SR	U																		+	+	X	X	+	X	X				
Western wood pewee	SR	C																		+	+	+	+	+	+	+	+	+	+	
Olive-sided flycatcher	SR	VC																		+	+	+	+	+	+	+	+	+	+	
Violet-green swallow	SR	C	X	+	+	+		+	+	+	+	+			+	+	+	+		+										X
Tree swallow	SR	VC	X	+	+	+		+	+	+	+	+			+	+	+	+		+										X
Bank swallow	SR	U	X	+	+	+		+	+	+	+	+	X		+	+	+	+		+										
Rough-winged swallow	SR	C	X	+	+	+		+	+	+	+	+	X		+	+	+	+		+										
Barn swallow	SR	VC	X	+	+	+		+	+	+	+	+			+	+	+	+		+										
Cliff swallow	SR	U	X	+	+	+		+	+	+	+	+	X		+	+	+	+		+										
Purple marten	SR	R	X	+	+	+		+	+	+	+	+			+	+	+	+		X										X
Gray jay	R	U																	+	+	+	+	+	+	+	+	+	X	X	
Steller's jay	R	VC																		+	+	+	+	+	+	+	+	+	+	
Scrub jay	R	R							+						+	X	X	+												
Common raven	R	C	X						+	X	X	X			+	+	+	+					+		+	+		+	+	
Common crow	R	VC	X						+	X	X	X			+	+	+	+					+		+	+		+	+	
Black-capped chickadee	R	R																		+		X	X		+	+				X
Mountain chickadee	R	R																							+	+		X	X	X
Chestnut-backed chickadee	R	VC																		+		+	+		+	+		X	X	X

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands SD	FG	UG	BG	Shrub SS	S	Deciduous YD	ID	OD	Mixed YM	IM	OM	YC	Conifer IC	OC	DD
BIRDS - cont'd																														
Common bushtit	R	C																		X		X	X		+	+		+	+	
White-breasted nuthatch	R	C																				X	X		+	+		+	+	X
Red-breasted nuthatch	R	C																				+	+		+	+		X	X	X
Brown creeper	R	C																				+	+		+	+		X	X	X
Wrentit	R	VC																	X	X		+	+		+	+		+	+	
Dipper	R	U	X			X																								
House wren	SR	U																		+		X	X		+	+		+	+	X
Winter wren	R	VC																		+		+	+		+	+		X	X	X
Bewicks wren	R	VC																		X	+	+	+	+	+	+		+	+	X
Long-billed marsh wren	R	U	X	X																										
Robin	R	VC								+					+	+	+	+		X	+	+	+	+	+	+		+	+	
Varied thrush	R	VC																		+	+	+	+	+	X	X	+	X	X	
Hermit thrush	R	C																				+	+		+	+		+	+	
Swainson's thrush	SR	VC																			+	+	+	+	X	X	+	X	X	
Western bluebird	SR	U							+						+	+	+	+		X	+	+	+	+	+	+	+	+	+	X
Townsend's solitaire	M	U																		X					+	+	+	X	X	
Golden-crowned kinglet	R	C																		+	+	+	+	+	+	+	+	X	X	
Ruby-crowned kinglet	R	U																		+	+	X	X	+	X	X	+	+	+	
Water pipet	M	R		+					+						X	X	+	+												
Bohemian waxwing	I	C																		+	+	X	X	+	+	+				
Cedar waxwing	R	U																		X	+	+	+	X	X	X				
Northern shrike	WV	R							+						+	+	+	+		X	+			+						
Loggerhead shrike	WV	R							+						+	+	+	+		X	+			+						
Hutton's vireo	R	R																		+					+	+	+	+	+	
Solitary vireo	SR	U																		+	+	X	X	+	+	+				
Red-eyed vireo	SR	R																		+	+	X	X	+	+	+				
Warbling vireo	SR	U																		+	+	X	X	+	+	+				
Orange crowned warbler	SR	VC																		X	+	+	+	+	+	+		+	+	
Nashville warbler	SR	R																		X	+	+	+	+	+	+		+	+	
Yellow warbler	SR	C	X																	X	+	+	+	+	+	+				
Yellow-rumped warbler	R	VC	X	X																X	+	+	+	+	+	+	+	+	+	
Black-throated gray warbler	SR	U																		X		X	X		X	X		X	X	
Townsend's warbler	WV	U																							+	+		X	X	
Hermit warbler	SR	U																							+	+		X	X	
MacGillivray's warbler	SR	U																		X	+	+	+							
Yellow throat	SR	R	X	X																										
Yellow-breasted chat	SR	R	X	X																										
Wilson's warbler	SR	VC																		X	+	X	X	+	+	+				
Western meadowlark	R	U							+						X	X	+	+												

Appendix Table 9 - cont'd

Species	Occurrence	Abundance	HABITATS - COMPONENTS USED: Aquatic - Semi-Aquatic: R	FM	P	ST	O	E	SM	TF	SB	RB	C	OI	Grasslands: SD	FG	UG	BG	Shrub: SS	S	Deciduous: YD	ID	OD	Mixed: YM	IM	OM	Conifer: YC	IC	OC	DD
BIRDS - cont'd																														
Red-winged blackbird	SR	C	X	X					+						+	+	+	+												
Brewer's blackbird	R	VC							+						X	X	+	+												
Brown-headed cowbird	SR	VC							+						X	X	+	+												
Western tanager	SR	U																		X					+	+	X	X	+	
Black-headed grosbeak	SR	VC																		+		X	X	+	+	+				
Lazuli bunting	SR	R	X																	X										
Evening grosbeak	R	U																		+		+	+	+	+	+	+	+	+	
Purple finch	R	U																		+		+	+	+	+	+	+	+	+	
House finch	R	R							+						+	X	X	+		+										
Pine siskin	R	VC																		X	+	+	+	+	+	+	+	X	X	
American goldfinch	R	VC							X						X	X	X	X		X										
Lesser goldfinch	R	U							X						X	X	X	X		X										
Red crossbill	I	C																							+	+	+	X	X	
Rufous-sided towhee	R	C																		X	X			X			X			
Savannah sparrow	R	C							+						+	+	+	X												
Vesper sparrow	SR	R							+						X	X	+	+												
Darkeyed junco	R	VC							+						+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	
Chipping sparrow	SR	R							+						X	X	X			X										
White-crowned sparrow	R	VC							+						+	X	X	X		X										
Golden-crowned sparrow	WV	U							+						+	+	+	+		X										
White-throated sparrow	WV	R							+						+	+	+	+		X										
Fox sparrow	R	C																	+	X	+			+			+			
Lincoln's sparrow	SR	R	X													X														
Song sparrow	R	VC							+						+	+	+	+	+	X	+			+			+			

Appendix Table 10. Definitions of the terms used in Table 3.

Definition of Terms
BIRDS AND MAMMALS - NATIONAL CLASSIFICATION (U.S. Dept. Inter. 1973a)
E - Endangered; (officially given recognition in the Federal Register) any species which is in danger of extinction throughout all or a significant portion of its range.
SU - Status undetermined; insufficient data currently available to reliably assess the status of the species; however, preliminary information indicates that the species may be threatened or endangered.
BIRDS - STATE CLASSIFICATION (Marshall 1969)
E - Endangered; an endangered species or subspecies is one whose prospects of survival and reproduction are in immediate jeopardy. Its peril may result from one or many causes - loss of habitat or change in habitat, overexploitation, predation, competition, disease. An endangered species must have help or extinction will probably follow.
R - Rare; a rare species or subspecies is one that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens. Close watch of its status is necessary.
P - Peripheral; a peripheral species or subspecies is one whose occurrence in Oregon is at the edge of its natural range and which is rare or endangered within Oregon, although not in its range as a whole. Special attention may be necessary to assure retention in our State's fauna.
SU - Status undetermined; a status undetermined species or subspecies is one that has been suggested as possibly endangered, or peripheral, but about which there is not enough information to determine its status. More information is needed.
MAMMALS - STATE CLASSIFICATION (Olterman and Verts 1972)
R - Rare; a rare species was defined as one which was very uncommon in Oregon, but was not in immediate danger of extirpation. A species may be rare as a result of man's activities, or it may be rare under natural conditions.
SU - Status undetermined; species for which relatively little information was available, and for which information obtained provided grossly conflicting evidence regarding their present status, were assigned to a category designed "status undetermined".

Appendix Table 11. Wildlife species of the Cascade Head Scenic-Research Area currently classified as game animals, protected wildlife, or unprotected wildlife by Oregon and/or Federal regulations, laws or treaties, as of July 1, 1975.

Birds	Mammals	Amphibians
	GAME ANIMALS#	
Ruffed grouse	Black-tailed deer	Bullfrog
Blue grouse	Roosevelt elk	
Mountain quail	Black bear	
Mourning dove	Beaver	
Band-tailed pigeon	Mink	
American coot	Marten	
Common snipe	Muskrat	
Black brandt	River otter	
Canada goose	Raccoon	
White-fronted goose		
Snow goose		
Mallard		
Gadwall		
Pintail		
Green-winged teal		
Blue-winged teal		
Cinnamon teal		
European widgeon		
American widgeon		
Shovler		
Wood duck		
Redhead		
Ring-necked duck		
Canvas back		
Greater scaup		
Lesser scaup		
Common goldeneye		
Burrows goldeneye		
Bufflehead		
Old squaw		
Harlequin		
Whitewinged scoter		
Surf scoter		
Common scoter		
Rudy duck		
Hooded merganser		
Common merganser		
Red-breasted merganser		
	PROTECTED WILDLIFE°	
All birds except "gamebirds" and "unprotected birds"	Harbor seal	Tailed frog
Red-winged blackbird*	Elephant seal	
Brewers blackbird*	Northern sea lion	
Cowbird*	California sea lion	
Common crow*	Flying squirrel*	
	Chickaree*	
	Townsend chipmunk*	
	UNPROTECTED WILDLIFE+	
Starling	All mammals, amphibians and reptiles not classified as game animals or protected wildlife may be taken at any time with a valid hunting license.	
House sparrow		

#Game animals - the taking of these animals is controlled by either State statute or regulation and Federal laws or treaties. NOTE: A large number of other animals are classified as game animals; however, there currently is no open season for these on the Siuslaw National Forest.

°Protected wildlife - the taking of these animals is prohibited by either State statute or regulation and by Federal laws or treaties. NOTE: *Species are protected except when causing damage to agriculture.

+Unprotected wildlife - The taking of these animals is allowed at any time by State statute or regulation and by Federal laws or treaties with the permission of the landowner and in compliance with applicable laws and regulations.

Appendix Table 12. Estimate of number of coho and chinook salmon from the Salmon River system caught by commercial and sports fishermen.

Species	No. Spawning (*)	Catch		
		Sport (+)	Commercial (+)	Total (X)
Coho	5,700	5,700	17,100	22,800
Chinook	2,180	2,180	4,360	6,540

(*) Oregon State Game Commission estimates (1972). Note this figure varies annually due to natural and man-caused factors.

(+) Commercial and sport catch based on a ratio of 2:1 for chinook and 3:1 for coho.

(X) Total catch based on a catch spawning ratio of 3:1 for chinook and 4:1 for coho.

Appendix Table 13. Index to the annual economic value of wildlife resources of the Cascade Head Scenic-Research Area and the Salmon River system.

Type of Activity	No. Days, Trips (+) or Fish	Expenditure or Gain Per Day, Trip(*) or Fish	Total
Recreational Fishing	2,994	7.00	20,958
Recreational Hunting-Trapping	340	13.00	4,420
Recreational Fishing-Salmon (Off Area)	7,880	39.20	308,896
Commercial Fishing (Off Area)			
Coho	17,100	5.70	97,470
Chinook	4,360	10.00	43,360
TOTAL			475,104

(+) Figures from previous section.

* $7.00 based on 1970 National Survey of Hunting and Fishing (U.S. Dept. Interior). Cost of $6.30/day fresh-water fishing increased to $7.00 to compensate for inflation.

$13.00 based on average daily cost of waterfowl, small game and big game hunting increased $1.00 to compensate for inflation (U.S. Dept. Interior 1975).

$5.70 and $10.00 figures are based on average dressed weight of 6.4 lbs/coho with a dockside piece of $0.90/lb and dressed weight of 10.1 lbs/chinook with an average dockside value of $0.99/lb. (Fish Commission of Oregon 1975).

$39.20 figure based on Oregon Fish Commission estimates. 1.4 days of effort to catch one salmon at a cost of $28.00 per day. This refers to fish caught in the ocean or in the stream off the Area. (Oregon Fish Commission 1975).

APPENDIX IV

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APPENDIX V

GEOLOGIC HAZARDS

GEOLOGIC HAZARDS*

Landslides and Unstable Slopes In the project area approximately 70 percent of the upland area has undergone some type of downslope movement. At present these areas of old landslides remain in various stages of instability, ranging from active movement locally to temporarily stable conditions in which changes of slope or drainage could reactivate movement.

The mapping and study of landslides was accomplished in part by automobile traverses conducted during reconnaissance mapping of geologic units. In selected areas foot traverses were made to observe specific landslide and slope conditions. No attempt was made to traverse every road in the Study Area or to observe from the ground all of the coastline.

The reliability of the interpretations regarding the landslides is considered to be reasonably good, however, in deference to the small scale and wide contour intervals of the base maps and the reconnaissance nature of the investigation, the specific boundaries indicated on the maps should be considered as approximate. Also, some smaller areas of stable ground within larger landslide areas have not been delineated. Exact boundaries can be established only by detailed studies of specific localities.

Landslide topography refers to a slope that has a rolling, hummocky or uneven surface. Erosion has generally modified the surface so that original landslide features such as cracks and headscarps are no longer present. Close examination of the bedding and structures of the rocks reveals large blocks of displaced material or float which have been carried downslope by the slide mass. Exposures in roadcuts and stream valleys often reveal a haphazard orientation of fragments of bedded rock.

Causes of Landslides Massive land failure is caused primarily by the high winter rainfall (80 to 150 inches per year), which saturates the weathered and soft marine sedimentary rocks underlying much of the Study Area. In large areas, a thin skin of residual soils has shifted downslope in response to gravity. Failures of mountainous terrain have been in the form of massive slow moving slumps and rapid mudflows. Bedding plane detachments and rapidly moving debris slides also have contributed to the landslide topography in certain areas.

One of the major causes of slope failure along the coast is wave erosion on the headlands and terraces. Sea stacks adjacent to the larger headlands testify to the former position of the coastline and to the erosive force of the sea. At present, the ocean is undercutting headlands and terraces, causing continual retreat of the shoreline.

High Ground Water Table In the lowland areas, the ground water table is at or near the ground surface much of the time. In higher areas, the water table may be near ground surface following periods of heavy rainfall. The presence of a high water table during any time of the year poses significant problems and all such areas should be considered as potentially hazardous for certain uses.

It is recommended that where high water table might be a concern, it be measured by means of shallow observation wells or piezometers during the winter months and that readings be taken at frequent intervals to determine the fluctuation of the water level. The potential hazards related to high ground water must be considered in planning and construction.

* This appendix is heavily based on "Environmental Geology of Lincoln County, Oregon" 1973, State of Oregon, Department of Geology and Mineral Industry

ENGINEERING GEOLOGY

Tertiary Siltstones (Ten, Tey). The topography of the siltstones ranges from moderately steep to low rounded foot slopes often modified by ancient landslides and soil creep.

The siltstones are thin bedded to massive and contain thin limestone lenses and concretions. Fine to medium grained sandstone layers occur within the Yamhill and Nestucca rocks.

The siltstones are easily excavated by construction equipment, and in most areas of unweathered rock the cut slopes stand on 1 to 1, horizontal to vertical. Cuts in which the bedding dips towards the excavation at about 15 degrees or more are apt to fail by material sliding along weak zones developed in the bedding planes. Where bedding planes dip into the hillside, cuts will stand steeply and will rarely fail by landsliding, providing the cut is not more than about 50 feet high.

Embankments made from this unit will need to be placed at very near optimum moisture content. The high silt contect of the Nye Mudstone makes it sensitive to small moisture changes. The units containing considerable amounts of weathered volcanic ash have a high shrink and swell ratio relative to changes in moisture content. Embankments of this material need to be properly compacted to prevent moisture from gaining access to the swelling clays.

Erosion of embankment slopes by heavy rains can be lessed by planting certain types of vegetation and by installing curbs and catch basins or ditches to carry the runoff on exceptionally long fills. Natural slopes may be ancient landslides, some of which have been so modified that they no longer are readily recognizable if during construction they are over steepened, overloaded, or if the drainage is modified appreciably. Slopes which are roughly parallel to the bedding will be especially subject to landslides in cut sections.

The foundation characteristics of this unit are poor. Light foundation loads will require normal precautions to assure satisfactory performance; heavy foundation loads will require detailed investigations to determine the depth of weathering, the structure, and the load carrying capacity of the bedrock.

Because of the low permeability and high winter precipitation, drain fields and septic tanks will be inoperative much of the year, although in certain areas of very low population density, septic tanks may operate properly.

VOLCANIC ROCKS

Except for steep headlands and areas overlain by marine terraces, soils have developed directly upon the volcanics. The soils are usually about 3 feet thick, but in swales and flat upland areas they can be as thick as 5 feet, and the underlying rock may be weathered to depths of 10 feet or more.

The engineering characteristics are variable, depending upon the type of material, topography and degree of weathering. The hard, dense basaltic rock can be used for road metal and riprap; however, good and poor rock often occur together in a single quarry face and mining must be selective in order to produce satisfactory material.

Excavation of the soft weathered breccias and lapilli tuffs can be made with normal construction equipment; however, pillow lavas and columnar and massive jointed lavas require drilling and blasting.

Cut clopes in weathered phyroclastics will generally stand steeply, about one vertical to one horizontal, providing the upper highly weathered rock and soil

zones are sloped on about two to one.

Embankments made from soils and highly weathered volcanic material must be placed at near optimum moisture content and well compacted. Partially weathered granular material will make satisfactory embankments; however, erosion of the embankment slopes could be a problem unless surface water is directed to a natural drainage channel. Planting of suitable cover is recommended on embankment and cut slopes.

River Terrace and Flood Plain Alluvium (Qal) The unit includes soils of the river bottom land and the uplifted river terraces. The alluvial deposits are predominantly silt, sand, and gravel; clay, organic soil, and peat may also be present in variable amounts.

The thickness of the alluvial deposits ranges from about 45 feet at the mouths of the major streams to as little as 8 or 10 feet at the upper ends of the larger valleys and in the smaller stream valleys.

Valley alluvium on flood plains has low foundation strength. Structures build on the flood plain should be designed for light foundation loads and be able to withstand flooding. Heavy structures could be located on flood plains if dense gravel or bedrock in the subsurface could be reached by means of spread footings or piling.

Weak foundation soils characteristic of the valley alluvium will consolidate under the weight of a roadbed embankment producing an uneven grade. Often the settlement will be slow and the full effects not apparent for a year or more. The amount of settlement will be slow and the full effects not apparent for a year or more. The amount of settlement which will occur can be determined by subsurface sampling and laboratory testing, with an analysis performed by a soils engineer.

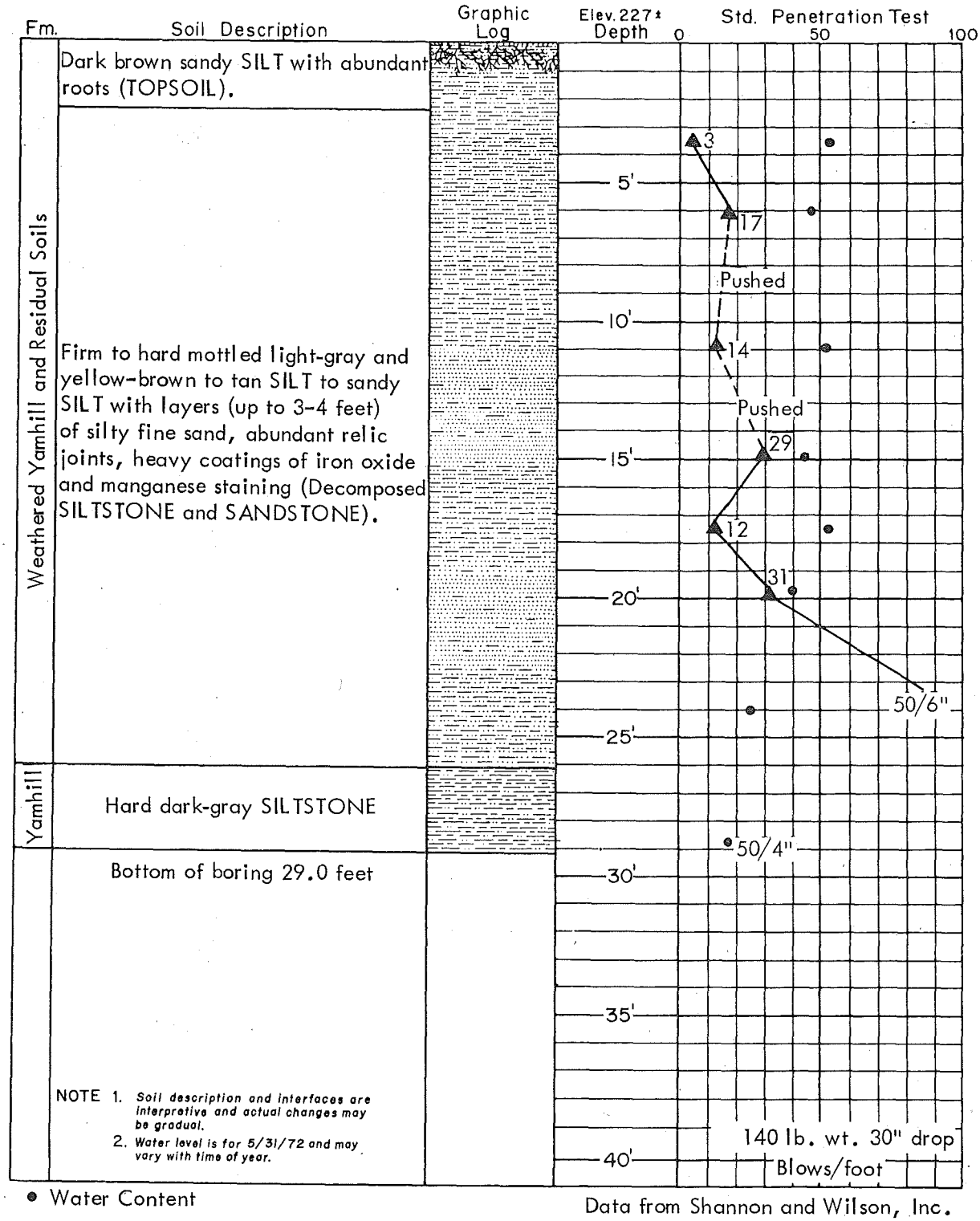
Tidal Flats (tf) Tidal flats are composed of fine grained sediments deposited in the brackish water interface between sea water in the bays and estuaries and fresh water brought down by major rivers. Tidal flats occur near the mouth of the Salmon River. During periods of heavy runoff and stream flooding, tidal flats receive considerable amounts of silt. Tidal currents bring in large amounts of sand from the ocean. Sand dune areas also contribute windborne sand. Some sections of the tidal flats are marshy and promote the growth of vegetation, including peat bogs.

In general, tidal flat materials are a mixture of find river-borne sediments, beach sand and organic matter in proportions depending upon proximity to the various sources of material.

The use of tidal flats for construction is limited because of frequent inundation and the presence of thick compressible soils. Areas not flooded by tides have a high water table and poor drainage. The use of these areas for drainfields is not recommended.

Foundation characteristics for any kind of spread footing are such that settlement will be excessive and uneven. Even moderately heavy structures should be placed on piling. If the deposits are thin, end-bearing piling resting on bedrock can be used; for thick deposits, friction bearing piles will perform satisfactorily.

Roads built over tidal flats must necessarily be placed on several feet of embankment in order to be above tide and flood water elevations. The weight of such an embankment, although low, is sufficient to cause considerable differential settlement and give the road a roller-coaster effect. The low permeability of the tidal muds will cause settlement to take place over a long period of time. Moderately high embankments may cause the foundation soils to fail by shearing.



Boring log of residual soils and siltstone of Yamhill Formation, Lincoln City water supply reservoir.

APPENDIX VI

DEFINITION OF USES AND ACTIVITIES

DEFINITION OF USES AND ACTIVITIES The following uses and activities were defined for evaluation purposes only. Actual proposals will be evaluated on their own merits.

1. Agricultural Crops - Consists of the growing of hay, grain or grasses.

2. Boat Facilities - Includes boat ramps and boat docking structures. A boat dock is defined as a rock groin structure which extends the land into the estuary. It is a U-shaped structure with the tips of the U extending to the land. The inside of the U would then be filled with spoils. Occasional dredging may be necessary to maintain sufficient water depth for docking of boats.

A boat ramp is defined as being a concrete surfaced strip with a gradient of between 12%-14%. The lower end of the concrete strip should fall below the minus 1 foot tide level. Road access is necessary for this use.

A boat ramp does not include other necessary accessories to the boat ramp, such as parking lots or toilets.

3. Motorized Boating - For purposes of this evaluation, a motorized boat will be defined as a 14' boat with a 20hp motor - V-shaped hull. The maximum speed of such a boat is 15 mph. The boat is used for fishing and crabbing - the use level is 10 boats per day.

4. Non-motorized Boating - Boating or traveling on the water in any device which is non-motorized. This may include such devices as rubber rafts, inner tubes, kayaks, canoes, sail boats and row boats. These boats may be used for fishing and crabbing.

5. Miscellaneous Buildings - Buildings used for a variety of uses, including out-buildings for farming, dormitories for outdoor education camps and meeting halls for outdoor education camps. Such buildings have a wood structure with a concrete foundation, and are less than 1,200 square feet in size.

6. Backpacking Camping - Is defined as the activity of camping in undeveloped areas. All camping equipment is carried by the camper and generally consists of a small pup tent, cooking equipment and spare clothing. An open fire is used for cooking purposes.

7. Dike Maintenance - Maintenance of existing dikes to prevent failure. It is generally necessary to dredge additional material from the ditch on either side of the dike and pile and compact on the original structure. Dike construction and removal were not evaluated for land suitability.

8. Dredging - Removal of subsurface material to increase the depth or width of an existing channel or water inlet.

9. Bank or Shoreline Fishing - Any angling for game fish which is not commercial. The rate of use which was evaluated was two "visitor days" per week.

10. Gathering Forest Products - Products which are gathered are used for personal rather than commercial use. Products which would be considered are mushrooms, berries, greenery, firewood, etc.

11. Underground Utilities - Included in this definition are:

a. Gas Lines - Are defined as a transmission facility for natural gas. The maximum excavation of 5' will be made by a backhoe. Also, backfill will be by backhoe. There is no maximum gradient on a gas line, however, intermediate pump stations may be necessary.

b. Power and Phone Lines - For purposes of the evaluation, power lines will be defined as being the underground type, with a maximum load of 800 kilowatts. Depth of cover for the power and phone line is a minimum of 30". The trench can be irregular in alignment but generally is aligned to accomodate easy location.

c. Water Line - Is defined as underground, gravity-fed water transmission lines. Minimum depth of coverage is three feet. Excavation will be accomplished by the use of a medium size backhoe. Backfilling will also be with the use of a backhoe.

12. Grazing - Is defined as the use of existing or man made grasslands by domestic cattle at the rate of 1 cow per acre per year. This activity also includes fences, salt licks and water tanks.

13. Hiking (Low Concentrations) - Traversing the terrain on other than a developed trail. The rate at which this use occurs is 40 people per day.

14. Residential Housing - Is defined as a single family dwelling on a concrete foundation together with necessary emenities such as a garage or carport, and wood storage building. The size of this structure is over 1,200 square feet.

15. Concentrated Foot Traffic - Normally associated with a parking lot, or other focal point.

16. Off-Road Vehicles - Cross country travel by a two or four wheel vehicle. No roads or trails are provided.

17. Parking Lot - Defined as having the capability for storage of not to exceed 20 cars. The dimensions are 60' x 100', which allow for 20 - 10' wide parking stalls and a 20' roadway between. The surface of the parking lot is asphalt covered. The maximum cross gradient is 2%.

18. Gravelled Road - Is defined as having 1 - 12' lane with inner visible turnouts. Maximum gradient is 8%, with shoulders of 2'. Minimum turning radius is 50'.

19. Paved Road - Is defined as having a 20' running surface, two lanes, and two foot shoulders. The maximum gradient is 12%.

20. Septic Tank and Drainfield - Septic tanks and drainfields are used in combination to dispose of liquid human, animal or industrial waste. Septic tanks are concrete, water-proof structures. Drainfields are made of perforated pipe at a depth of no less than 3' below surface level, and 6' above ground water.

21. Sewer Lines - The maximum gradient on a 4" sewer line is 8%. Excavation will vary from 36" to 10'. A large backhoe will be used for excavation and backfilling. The maximum spacing between manholes is 300', with a minimum of 100'.

22. Stream Channelization Facilities - Are defined as rock, cement or pile structures which deflect water or tend to deepen channels.

23. Timber Harvest (Clear Cut) - This type of activity is defined as a 40-acre clear cut which is then burned and successfully reforested with standard techniques to a commercial species.

24. Timber Harvest (Selective) - In this type of harvest, small groups (one or two acres) of individual trees are selected and cut. This type of harvest tends to give variety to the tree canopy. Slash is piled and burned. Natural seeding or planting is relied on for regeneration. A mobile yarder is used.

25. Vault Toilet - Is defined as a wooden two-unit building (male and female) with a water tight vault.

26. Trail - Construction and maintenance of a trail will have a maximum gradient of 5% with a tread width of 2'. No surfacing material is used.

27. Herbicides - Alteration of existing vegetative patterns or species composition by ground or aerial application of vegetative chemicals.

28. Land Fill - Deposits of foreign soils or vegetative material extracted or cleared from other lands - 50 cubic yards to a 2 foot depth.

APPENDIX VII

PUBLIC LAW 93-535

Public Law 93-535
93rd Congress, H. R. 8352
December 22, 1974

An Act

88 STAT. 1732

To establish the Cascade Head Scenic-Research Area in the State of Oregon, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to provide present and future generations with the use and enjoyment of certain ocean headlands, rivers, streams, estuaries, and forested areas, to insure the protection and encourage the study of significant areas for research and scientific purposes, and to promote a more sensitive relationship between man and his adjacent environment, there is hereby established, subject to valid existing rights, the Cascade Head Scenic-Research Area (hereinafter referred to as "the Area") in the Siuslaw National Forest in the State of Oregon.

Cascade Head Scenic-Research Area, Oreg. Establishment. 16 USC 541.

SEC. 2. The administration, protection, development, and regulation of use of the Area shall be by the Secretary of Agriculture (hereinafter referred to as the "Secretary") in accordance with the laws, rules, and regulations applicable to national forests, in such manner as in his judgment will best contribute to attainment of the purposes of this Act.

Administration. 16 USC 541a.

SEC. 3. (a) The boundaries of the Area, and the boundaries of the subareas included therein, shall be those shown on the map entitled "Proposed Cascade Head Scenic-Research Area", dated June 1974, which is on file and available for public inspection in the office of the Chief, Forest Service, United States Department of Agriculture: *Provided*, That, from time to time, the Secretary may, after public hearing or other appropriate means for public participation, make adjustments in the boundaries of subareas to reflect changing natural conditions or to provide for more effective management of the Area and each of the subareas in accordance with the purposes and provisions of this Act.

Boundaries. 16 USC 541b.

(b) As soon as practicable after the enactment of this Act, the Secretary shall, with provisions for appropriate public participation in the planning process, develop a comprehensive management plan for the Area. Said plan shall prescribe specific management objectives and management controls necessary for the protection, management, and development of the Area and each of the subareas established pursuant to subsection (c) hereof.

Comprehensive management plan.

(c) Within the Area, the following subareas shall be established and shall be managed in accord with the following primary management objectives which shall be supplemental to the general management objectives applicable to the entire Area:

Subareas, establishment.

(1) Estuary and Associated Wetlands Subarea: An area managed to protect and perpetuate the fish and wildlife, scenic, and research-education values, while allowing dispersed recreation use, such as sport fishing, nonmotorized pleasure boating, waterfowl hunting, and other uses which the Secretary determines are compatible with the protection and perpetuation of the unique natural values of the subarea. After appropriate study, breaching of existing dikes may be permitted within the subarea.

(2) Lower Slope-Dispersed Residential Subarea: An area managed to maintain the scenic, soil and watershed, and fish and wildlife values, while allowing dispersed residential occupancy, selective recreation use, and agricultural use.

(3) Upper Timbered Slope and Headlands Subareas: Areas managed to protect the scenic, soil and watershed, and fish and wildlife values while allowing selective recreation and extensive research-educational activities. Timber harvesting activity may occur in these subareas only when the Secretary determines that such harvesting is to be conducted in connection with research activities or that the preservation of the timber resource is imminently threatened by fire, old age, infestation, or similar natural occurrences.

(4) Coastline and Sand Dune-Spit Subareas: Areas managed to protect and maintain the scenic and wildlife values while allowing selective recreation and extensive research-educational activities.

88 STAT. 1733

Siuslaw National Forest, boundary extension. 16 USC 541c.

SEC. 4. (a) The boundaries of the Siuslaw National Forest are hereby extended to include all of the lands lying within the Area as described in accordance with section 3 of this Act which are not within the national forest boundaries on the date of enactment of this Act.

(b) Notwithstanding any other provision of law, any Federal property located on the lands added to the Siuslaw National Forest by this section may, with the concurrence of the agency having custody thereof, be transferred without consideration to the administrative jurisdiction of the Secretary. Any lands so transferred shall become part of the Siuslaw National Forest.

Lands and waters, acquisition. 16 USC 541d.

SEC. 5. (a) Subject to the provisions of subsection (b) of this subsection, the Secretary is authorized to acquire lands, waters, or interests therein within the Area by donation, purchase, exchange, or otherwise.

(b) Within all subareas of the Area except the estuary and associated wetlands subarea, the Secretary may not acquire any land or interest in land without the consent of the owner or owners so long as the owner or owners use such land for substantially the same purposes and in the same manner as it was used and maintained on June 1, 1974: *Provided, however*, That the Secretary may acquire any land or interest in land without the consent of the owner or owners when such land is in imminent danger of being used for different purposes or in a different manner from the use or uses existing on June 1, 1974. The Secretary shall publish, within one hundred and eighty days of the enactment of this Act, guidelines which shall be used by him to determine what constitutes a substantial change in land use or maintenance for the non-federally-owned lands within the Area. Within the estuary and associated wetlands subarea the Secretary may acquire any land or interest in land without the consent of the owner or owners at any time, after public hearing.

Guidelines, publication.

Hearing.

(c) At least thirty days prior to any substantial change in the use or maintenance of any non-federally-owned land within the Area, the owner or owners of such land shall provide notice of such proposed change to the Secretary or his designee, in accordance with such guidelines as the Secretary may establish.

Notice of proposed change.

SEC. 6. Notwithstanding the provisions of clause 7(a)(1) of the Act of September 3, 1964 (78 Stat. 903), as amended, moneys appropriated from the Land and Water Conservation Fund shall be available for the acquisition of any lands, waters, or interests therein within the area added to the Siuslaw National Forest by this Act.

Availability of funds. 16 USC 541e. 16 USC 460l-9.

SEC. 7. The lands within the Area, subject to valid existing rights, are hereby withdrawn from location, entry, and patent under the United States mining laws and from disposition under all laws pertaining to mineral leasing and all amendments thereto.

16 USC 541f.

SEC. 8. (a) The Secretary, pursuant to the Federal Advisory Committee Act (86 Stat. 770), shall establish an advisory council for the Area, and shall consult on a periodic and regular basis with such coun-

Advisory council. 16 USC 541g. 5 USC app. I.

cil with respect to matters relating to management of the Area. The members of the advisory council, who shall not exceed eleven in number, shall serve for the individual staggered terms of three years each and shall be appointed by the Secretary as follows— Membership.

(1) a member to represent each county in which a portion of the Area is located, each such appointee to be designated by the respective governing body of the county involved;

(2) a member appointed to represent the State of Oregon, who shall be designated by the Governor of Oregon; and

(3) not to exceed eight members appointed by the Secretary from among persons who, individually or through association with national or local organizations, have an interest in the administration of the Area.

(b) The Secretary shall designate one member to be chairman and shall fill vacancies in the same manner as the original appointment.

(c) The members shall not receive any compensation for their services as members of the advisory council, but they shall be reimbursed for travel expenses and shall be allowed, as appropriate, per diem or actual subsistence expenses. Compensation.

(d) In addition to his consultation with the advisory council, the Secretary shall seek the views of other private groups, individuals, and the public, and shall seek the views and assistance of, and cooperate with, all other Federal, State, and local agencies with responsibilities for zoning, planning, migratory fish, waterfowl, and marine animals, water, and natural resources, and all nonprofit agencies and organizations which may contribute information or expertise about the resources, and the management, of the Area, in order that the knowledge, expertise and views of all agencies and groups may contribute affirmatively to the most sensitive present and future use of the Area and its various subareas for the benefit of the public.

SEC. 9. The Secretary shall cooperate with the State of Oregon and political subdivisions thereof in the administration of the Area and in the administration and protection of lands within and adjacent to the Area owned or controlled by the State or political subdivisions thereof. Nothing in this Act shall deprive the State of Oregon or any political subdivision thereof of its right to exercise civil and criminal jurisdiction within the Area consistent with the provisions of this Act, or of its right to tax persons, corporations, franchises or other non-Federal property, in or on the lands or waters within the Area. State jurisdiction. 16 USC 541h.

Approved December 22, 1974.

LEGISLATIVE HISTORY:

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SENATE REPORT No. 93-1089 (Comm. on Interior and Insular Affairs).
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Dec. 3, House concurred in Senate amendment with an amendment.
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GPO 38-139