DNR's HCP Road Management Strategy

In 1994, an analysis of the transportation information contained in the DNR GIS system showed that the average density of roads in the 9 HCP planning units ranged from 1.69 to 3.29 miles per square mile although road density varies greatly within each planning unit.

The options available to the DNR to reduce the mass wasting and surface erosion impacts to streams primarily focus on the amount and location of problem roads that are currently unnecessary and on how well necessary roads are managed. Road management can best be addressed with improved design, construction compliance, control of use, and maintenance management. Potential problems can be best addressed during a landscape level planning phase.

DNR will initially focus on improvements in the more sensitive areas of a landscape with priority given to locations on steep slopes with unstable soils and high precipitation, and locations within 100 feet of Type 1, 2, and 3 waters and wetlands.

Planning. DNR will ensure that planning processes specifically include the consideration of longer yarding capacity systems whenever faced with placing roads in unstable areas. The alternatives generated during the planning process will be reviewed by an interdisciplinary team of foresters, scientists, and engineers who will evaluate the environmental, silvicultural, public use, and economic benefits and costs of these alternatives and recommend harvest strategies for these sensitive areas. Alternate locations for new roads will be considered in more sensitive areas where other slope-parallel roads exist. The selection process will emphasize the overall goals of the HCP.

In considering road densities, it is assumed that the current emphasis on small staggered settings with greenup requirements, and partial cut silvicultural systems designed to achieve environmental objectives will continue. These systems will, by their nature, result in more extensive road systems which will be active for longer periods of time. While expansion is inevitable as new areas are accessed, DNR's goal will be to reduce the additional amount of new roads needed through careful planning and control the overall size of the network by effective abandonment.

Design.

1. In unstable areas DNR will consider options such as:
    a. road designs by professional engineers,
    b. narrower running surfaces,
    c. less steep cut and fill slopes,
    d. more comprehensive slope revegetation/stabilization systems,
    e. designed slope retaining structures,
    f. larger and more frequent cross drains,
    g. full bench on all roads located on 40 percent or greater side slopes,
    h. endhaul of waste on all sideslopes greater than 55 percent,
    i. subgrade and surfacing matrix enhancers (fabric, lime, concrete),
    j. outsloping where appropriate,
    k. permeable fills to stabilize sub-grades, and

l. other techniques for road-benching, including sliver-fills, back casting, and multi-benching.

2. When within 100 feet of Type 1, 2, or 3 waters or wetlands DNR will consider options such as:
   a. higher quality rock surfacing specifications or the use of surfacing binders such as asphalt or lining sulfonate,
   b. more comprehensive cut and fill slope revegetation/stabilization systems,
   c. design of culverts and bridges for debris capacity as well as 100-year flood hydraulic criteria, and
   d. placing sediment traps to avoid delivery of surface erosion into stream crossings, particularly at sites of through-cuts.

Construction.

1. In unstable areas DNR will consider options such as:
   a. slope stake design and compliance on road construction on 55 percent sideslopes,
   b. thorough compaction of subgrade,
   c. prohibition of woody debris from all fills,
   d. compact fills on slopes between 40 percent and 55 percent in 6 inch lifts with compacting machines designed for that purpose,
   e. control of road construction shutdowns using moisture content indicators,
   f. controlled blasting, (e.g., pre-splitting) in order to avoid triggering landslides, especially during wet conditions, and
   g. employing a backhoe rather than dozer to reduce ground-disturbance.

2. When within 100 feet of Type 1, 2, or 3 waters or wetlands DNR will consider options such as:
   a. thorough compaction of subgrade,
   b. filter barriers downslope of construction,
   c. full diversion of flowing waters during culvert installation,
   d. silt filter devices at outlets of cross drains,
   e. shut down of construction during inclement weather, and
   f. limiting the extent of exposed soils adjacent to a watercourse.

3. Reconstruction of necessary roads on unstable soils will be given high priority.

Road Use.

1. In unstable areas DNR will consider options such as closing roads to log truck traffic during high rainfalls.
2. When within 100 feet of Type 1, 2, or 3 waters or wetlands DNR will consider options such as:
   a. closing roads to log truck traffic during high rainfalls,
   b. placing limits on volume hauled per day on marginal road segments,
   c. restricting hauling on some road systems to low pressure tire hauling vehicles (Central Tire Inflation),

d. closing temporarily inactive road segments with gates, and
e. silt filter devices at outlets of cross drains.

Maintenance.

1. In unstable areas DNR will consider options such as:
   a. road stabilization techniques that reduce the size of the road prism,
   b. stabilizing and armoring cut and fill slopes, and
   c. more frequent ditch and drainage structure maintenance,
2. When within 100 feet of Type 1, 2, or 3 waters or wetlands DNR will consider options such as:
   a. paving or lignin sulfonate surfacing stabilizers,
   b. more frequent ditch and surface maintenance, and
   c. resurfacing projects.

Abandonment. The DNR will become more aggressive in abandoning unneeded unstable roads and will increase the level of integrating abandonment of short use spurs in conjunction with timber sale activities.

pg. IV.57 - add to the end of the third bullet:
(e.g., because land is in mines, farms, or housing developments). In such situations an interdisciplinary team of scientists will be convened to develop a prescription for DNR-managed land within the drainage basin and economic considerations will be included in their deliberations.

pg. IV.58 - change the end of the second paragraph:
Wetlands...In the field, the width of the wetlands buffer shall be measured as the ~~slope~~ horizontal distance from, and perpendicular to, the edge of the wetland. ~~For purposes of mapping and accounting, the width of the riparian buffer will be reported as horizontal distances.~~ Seeps and wetlands smaller than 0.25 acre will be afforded the same protection as Type 5 waters. That is, such features will be protected where part of an unstable hillslope. Research to study the effects on aquatic resources of forest management in and around seeps and small wetlands will be included in research program for Type 5 waters.

pg. IV.58 - change the last paragraph:
Forestry operations in wetlands and wetland buffers shall be in accordance with DNR's policy of no overall net loss of wetland function. Forest management in forested wetlands and in buffers of nonforested wetlands will minimize entries into these areas and utilize practices that minimize disturbance, such as directional felling of timber away from wetlands and equipment that cause minimal soil disturbance (e.g., tractors with low pressure tires). If ground disturbance caused by forest management activities alters the natural surface or subsurface drainage of a wetland, then restoration of the natural drainage shall be required...

Rationale for the Conservation Components	No change
Effects of the Riparian Conservation Strategy on Salmonid Habitat	No change

E. Olympic Experimental State Forest Planning Unit

Integrated Approach to Production and Conservation

pg. IV.70 - delete subparagraph (4) and replace with:
(4) To learn to integrate older forest ecosystem values and their functions with commercial forest activities using, as a working hypothesis, that landscapes managed for a fairly even apportionment of forest cover among stands in all stages of development, from stand initiation to old growth (Oliver and Larson 1990) will support desirable levels of both commodities and ecosystem functions.

Conservation Strategy for the Northern Spotted Owl in the Olympic Experimental State Forest

pg. IV.77 - change the fourth paragraph:
...See Table IV.5. ~~It is likely that the best estimates of potential habitat are intermediate between those, based on stands more than 50 and 70 years old.~~ These estimates of the abundance of potential habitat based on stand age are not perfect. For example, some stands not much older than 100 years would be classified as sub-mature habitat based on their structure and composition, just as some 75 year-old stands with a substantial component of older trees would be classified as old-forest habitat. But it is likely that estimates of the abundance of old-forest habitat are relatively unbiased, that is, some stands estimated to be old-forest habitat are really sub-mature and some stands estimated to be sub-mature are really old-forest. Similarly, estimates of the abundance of sub-mature habitat are likely to be relatively unbiased. However, the abundance of young-forest marginal habitat is likely overestimated based on the abundance of stands currently over 50 years old. The structure and composition of some of these stands are such that they would offer too few opportunities for foraging and roosting to be classified as young-forest marginal habitat. It is likely that the current abundance of young-forest marginal habitat is some proportion of the abundance of forest stands between 51 and 70 years of age and that proportion varies among landscape planning units with stand-level and landscape-level features that are unique within landscapes. Currently, potential spotted owl habitat[6] probably does not constitute much more than 40 percent of any landscape planning unit, although old-forest habitat appears to be at or above the 20 percent threshold in ~~five~~ several landscape planning units (Table IV.5).

[6]In discussions regarding northern spotted owls and the OESF, the term "potential spotted owl habitat is used to generally characterize forest stands that, because of their structure and composition, are similar to those described as young- or old-growth forest spotted owl habitat by Hanson et al. (1993). The adjective "potential" is used to acknowledge that not all such stands will actually be used (become habitat) by owls, for a variety of reasons including that they occur in landscapes dominated by clearcuts and young plantations and are thus incapable of supporting owls. (Note: All footnote numbers in this chapter would increase by one.)

pg. IV.85 - change the footnotes to Table IV.6:
[2]Non-habitat is ~~estimated as~~ assumed to be either a) untreated stands 50 years old or younger, or b) stands ~~older than 70~~ that were 71 years old or older ~~that were treated with~~

~~a partial harvest not more than 10 years previously~~ when they were partially-harvested within the past 10 years.

[3]Young-forest marginal habitat is estimated ~~as stands 50-70~~ to be either a) untreated stands 51-70 years old, or b) stands ~~older than 70 years that were treated with a partial harvest 11-30 years previously~~ that were 71 years old or older when they were partially-harvested within the past 11-30 years.

[4]Sub-mature habitat is estimated ~~as stands 71-100~~ to be either a) untreated stands 71-100 years old, or b) stands ~~older than 70 years that were treated with a partial harvest 31-50 years previously~~ that were 71 years old or older when they were partially-harvested within the past 31-50 years.

[5]Old-forest habitat is estimated as ~~stands 101~~ to be either a) untreated stands 101 years old or older, or b) stands ~~older than 70 years that were treated with a partial harvest 51 or more years previously~~ that were 71 years old or older when they were partially-harvested over 51 years ago.

pg. IV.86 - change last paragraph:
(4) Harvests of available young- and old-forest habitat will be evenly distributed over the duration of the restoration phase~~, i.e., over the first 40 to 60 years of the HCP~~. Available habitat will be calculated for each landscape planning unit, and harvests of that habitat will be scheduled and conducted so that they are evenly distributed by decade over the duration of the restoration phase of the HCP.

pg. IV.87 - insert new first paragraph:
(5) Harvests of available young- and old-forest habitat will be scheduled in consideration of the value of individual owl sites to conservation, research, and validation monitoring in the OESF. DNR will consider the recommendations of USFWS when scheduling these harvests during the first decade of the HCP.

pg. IV.87 - renumber first subparagraph on page (5) to (6):

Riparian Conservation Strategy for the Olympic Experimental State Forest

pg. IV.97 and 98 - delete the entire last paragraph on pg. 97 and the text on pg. 98 through the end of the paragraph beginning with "Active channel margins..." and replace with:
Average buffer widths are given in Table IV.7. as average horizontal distances measured outward from the outer margin of the 100-year floodplain on either side of the stream. The 100-year floodplain is the valley-bottom area adjoining the stream channel that is constructed by the stream under the present climatic regime and overflowed at times of very high discharge (i.e., flooding associated with storms of a 100-year recurrence interval; Dunne, T., and L.B. Leopold. 1987). One-hundred-year floodplains commonly are delineated by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRM) for each county of the state. The 100-year floodplain

includes meandering, braided (i.e., multiple channel braids), and avulsion channels, as well as side channels that transport water from one part of a mainstream channel to another. Avulsion channels are portions of mainstream and side channels that have been abandoned temporarily by lateral displacement of the channel network elsewhere on the floodplain but are expected to be reoccupied when the network migrates back across the valley bottom.

The 100-year floodplain, which often encompasses the channel-migration zone, frequently occupies a several-hundred-foot wide section of the valley bottom on low-gradient, alluvial river systems. On higher-gradient streams in moderate to steep terrain, the 100-year floodplain typically coincides with the active channel margin or extends only a few feet beyond the active (e.g., the high-water mark). The active channel consists of the wetted area and bed or bank surfaces exposed during low flows, as well as portions of the valley bottom nearest the channel that are inundated during typical flood events (i.e. comparable to the two-year recurring flood). Active channel margins commonly are identified in the field by piles of accumulated flood debris, overbank sediment deposits, streamside vegetation altered or damaged by channel flows, bank scour, and the absence of aquatic biota (e.g., alea) normally found in slack-water channels. In the five west-side planning units and the OESF, DNR manages only a few hundred acres on 100-year floodplains of the major river systems. Most floodplain acreage is privately owned or federally managed. FEMA maps indicate that most 100-year floodplains are associated with Type 1 and 2 water. Collectively, Type 1 and 2 waters represent less than 5 percent of stream miles on DNR-managed lands. Hence, the impact to DNR management associated with using the 100-year floodplain as the inner margin of riparian management zones is relatively negligible.

pg. IV.99 - change the last paragraph on the page:
There are no available quantitative models or databases that specify which Type channels require buffer protection...In addition, streams listed as Type 9 (unclassified) or streams not in DNR's hydrology databases will be treated similarly. Type 4 or 5 streams documented to contain fish that are proposed or candidates for federal listing will be treated as Type 3 waters. Type 5 channels with a potential for delivering water, wood, sediment, nutrients, and energy to the channel network will be protected from the active channel margin outward tot he topographic break in slop on either side of the channel, as well as upstream to the channel initiation point and downstream to the channel confluence. (See Figure IV.9).

pg. IV.99, and 104 - change the last paragraph on pg. 99 (that continues on pg. 104):
Figures IV.10, IV.11, and IV.12 demonstrate ~~the~~ one of several potential scenarios for the adjustment of riparian-buffer widths to meet site conditions. These buffer configurations are based on mass-wasting inventories and field assessments of physical and ecological riparian conditions. Figure IV.10 shows the application of the expected average interior-core and exterior buffer widths to a segment of the Clallam River and its tributaries. Figure IV.11 compares the expected average riparian buffer widths for the same area and buffers designed solely on the basis of mass-wasting inventories. Figure IV.12 shows ~~the~~ one potential example of a buffer configuration that would include mass-wasting sites and

meet riparian conservation objectives for maintaining physical and ecological functions of the riparian system.

pg. IV.103 - change the title of Figure IV.12:
Application of expected average riparian buffer widths adjusted for mass-wasting sites for a segment of the Clallam River and its tributaries: one potential scenario

pg. IV.104 - change the last paragraph:
Widths for the exterior buffers were estimated by qualitatively evaluating historical patterns of windthrow resulting from average winter storms in the OESF (discussed in the Draft EIS that accompanies this HCP) and by reviewing the limited information available from local wind-buffer trials. As a starting hypothesis, the average width of exterior buffers will be 150 feet for Type 1 through 3 streams and 50 feet for Type 4 and 5 streams (Table IV.8), measured in ~~slope~~ horizontal distances laterally from the outer edge of the interior-core buffer on either side of the stream...

pg. IV.105 - change Table IV.8: Proposed average widths of exterior riparian buffers in the Olympic Experimental State Forest:

pg. IV.105 - change bullet (1):
(1) Standard procedure: To achieve the objective of wind-firm riparian forest, wind buffers will be placed on all riparian segments for which stand wind-firmness cannot be documented by historical information, windthrow modeling (e.g., Tang 1995), or other scientific means. Thirty-three percent or less, by volume, of the riparian trees in the designated exterior buffer may be removed for commercial purposes (i.e., excluding pre-commercial thinning and restoration activities) per rotation, until research is available supporting more frequent entry. This percentage corresponds to the lightest intensity partial harvest currently used in the Experimental Forest to produce forest stands that are robust and diverse, both structurally and compositionally...

pg. IV.106 - add bullets (6) through (8) under subheading Comprehensive Road-Maintenance Plans:

(6) minimize active road density

(7) prioritize roads for decommissioning, upgrading, and maintaining

(8) identify fish blockages caused by stream crossings and prioritize their retrofitting or removal

pg. IV.109 - change bullet (top of page) (1):
(1) the monitoring method ~~titled~~ described in Standard Methodology for Conducting Watershed Analysis ~~currently being developed for the state forest Practices Board~~ (~~WFPA 1994~~ WFPB 1995b);

pg. IV.110 - change third paragraph:
Although the riparian conservation buffers have been established on the basis of physical arguments, DNR expects that these buffers will contribute to the maintenance and

recovery of ecological habitat complexity in aquatic and riparian systems. This hypothesis derives from the current understanding of the dynamics and processes of these systems. For that reason, research and monitoring can improve scientific knowledge and management practices in the Experimental Forest.

pg. IV.110 - add to end of the last paragraph:
...Estimated site potential tree heights for the Experimental Forest are: for Types 1 and 2 streams, 108 feet for a 50-year growing period, 155 feet for a 100-year period, and 168 feet for a 120-year period; and for Types 3 through 5 streams, 105 feet for a 50-year growing period, 153 feet for a 100-year period, and 165 feet for a 120-year period. Field measurements (McDade et al. 1990) indicate that buffer widths equal to approximately 60 percent of the average tree height will provide 90 percent of the natural level of instream large woody debris. Extrapolating from these results, a buffer width equal to approximately the 100-year site potential tree height, which is more than 60 percent of the 200-year site potential tree height (i.e., 60 percent of an old-growth tree height), should provide more than 90 percent of the natural level of instream large woody debris.

pg. IV.114 - change last paragraph:
Prior to landscape planning in each of the 11 landscape planning units in the Experimental Forest, watershed conditions will be evaluated and monitored through a 12-step watershed assessment procedure (described later). Results from assessments of physical and biological conditions obtained from the regulatory watershed-analysis process (WFPB 1994) will be used where possible, in lieu of those assessments required in the 12-step process. Therefore, following the implementation of the OESF, preliminary assessments and management activities will occur before landscape planning in most landscape planning units.

pg. IV.115 - change second paragraph:
....The agency may wish to sponsor a regulatory watershed analysis in lieu of some or all parts of the 12-step process. Given the watershed concerns in the OESF, however, DNR likely will go beyond the state Forest Practices Board (WFPB 1994) methods in order to account for issues not addressed in the Forest Practices Board Manual...

pg. IV.117 - change bullet (3):
(3) Conduct preliminary assessment of physical and biological watershed conditions. Use results from the regulatory watershed-analysis process, where available. Table IV.11 lists the components of this assessments, some or all of which might be included in the analysis. Methods and guidelines would be established in agency procedures developed for the OESF...

pg. IV.119 - change last sentence:
Management activities in the interior-core buffers, or forested wetland and their buffers, would exclude herbicide release and new road construction in riparian areas unless, in the case of riparian buffers, stream crossings are essential ~~and herbicide release~~. Roads in wetlands or their buffers will require on-site and in-kind...

pg. IV.120 - change first bullet:

- partial cuts of 33 percent or less by volume, per rotation, aggregated or dispersed, depending on the operational objectives for maintaining wind-firm stands;

Multispecies Conservation Strategy for Unlisted Species in the Olympic Experimental State Forest

pg. IV.124 - change the fourth paragraph:
The habitats most critical for the conservation of unlisted species on DNR-managed lands in the OESF contain elements of late successional coniferous forest, riparian areas and wetlands, or both...Thus, special conservation measures for talus fields, caves, cliffs, large snags, and large, structurally unique trees may be important to these species..

pg. IV.129 - change sixth paragraph:
Conservation measures for large snags and large, structurally unique trees (described in the discussion of uncommon habitats in Section F of this chapter titled Multispecies Conservation Strategy in the Five West-side Planning Units) will retain ~~habitat for nesting and roosting~~ structural elements required by pileated woodpeckers for nesting and roosting. Additional conservation measures for snags (also described in Section F of this chapter) will increase the density of snags, and consequently, opportunities for foraging.

Consistent with RCW 77.16.120, trees or snags that are known to contain active pileated woodpecker nests will not be harvested. In addition, trees or snags that are known to have been used by pileated woodpeckers for nesting will not be harvested. Green tree and snag retention are subject to the safety standards of the Department of Labor and Industries (WAC 296-54).

F. Multispecies Conservation Strategy for Unlisted Species in the Five West-side Planning Units

Introduction

pg. IV.134 - change first paragraph:
...Therefore, in places where DNR believes that effective conservation can be provided in a more efficient way, DNR through ~~consultation~~ cooperation with ~~the Washington Department of Fish and Wildlife or~~ the U.S. Fish and Wildlife Service, may develop a site-specific management plan that provides adequate protection for the species or habitat occurring at that site. When a management plan approved by ~~the Washington Department of Fish and Wildlife or~~ the U.S. Fish and Wildlife Service is in place, the special management prescriptions and/or additional mitigation specified in this HCP shall be waived.

pg. IV.134 - add to the end of the first full paragraph:
If, however, DNR discovers some active nesting, denning, or roosting sites in the course of forest management activities, or through voluntary surveys, or such sites are documented by the Washington Department of Fish and Wildlife on DNR-managed

lands, DNR shall provide the special protection described in the subsection titled Species by Species Conservation. At the time a new species is proposed for listing, and a written request to add that species to the permit is made by DNR, DNR will evaluate and consider additional protection measures such as seasonal restrictions and protection of nesting/denning sites.

Conservation Objectives

pg. IV.134 - change second full paragraph:
Within the five west-side planning units, ~~63~~ 53 animal species are considered species of concern because information indicates they face some risk of extinction: nine are federally listed, ~~33 are federal candidates,~~ two, including the bull trout, are federal candidates, 22 are federal species of concern, two are listed by the state but have no special federal status, 11 are state candidates with no special federal status, ~~and bull trout~~ and seven species of anadromous salmonids have been or are under review by the federal government for listing.

pg. IV.134 - change last paragraph on IV.134 and first three bullets on pg. IV.135:
DNR had identified three conservation objectives for its multispecies strategy on DNR-managed lands in the five west-side planning units to provide habitat that:

(1) ~~to provide habitat that~~ helps maintain the geographic distribution of unlisted species that have small annual or breeding-season home range areas ~~(less than approximately 1 square mile)~~;

(2) ~~to provide habitat that~~ contributes to demographic support of populations of unlisted species with large home ranges ~~(greater than approximately 1 square mile)~~ on federal forest reserves (National Parks, National Forest Wilderness Areas, National Forest Late Successional Reserves, etc.); and

(3) ~~to provide habitat that~~ can facilitate the dispersal of these wide-ranging species among federal forest reserves.

Conservation Strategy — No change

Benefits of the Species-specific Strategies to Unlisted Species

pg. IV.139 - change the last sentence of the second paragraph:
The conservation strategies for salmonids and marbled murrelets should serve to reduce the risk of extinction for many unlisted species, in particular those that have small home ranges and depend on riparian/wetland ecosystems or late successional forests...The conservation measures for talus fields, caves, cliffs, oak woodlands, large snags, and ~~very large old~~ large, structurally unique trees described later in this section are intended to provide habitat for these species.

Protection of Uncommon Habitats

pg. IV.139 - change the first paragraph under this heading:
The conservation strategies for salmonids, spotted owls, and marbled murrelets protect habitat for many unlisted species particularly those associated with late successional forests or riparian ecosystems...These measures specifically address talus, caves, cliffs, oak woodlands, large snags, and ~~very large old~~ large, structurally unique trees. The protection of talus, caves, cliffs, and oak woodlands is important because once altered or destroyed, these habitats are difficult to restore or recreate. ~~Very large old trees~~ Large snags and large, structurally unique trees are essential habitat elements that are generally scarce in managed forests.

pg. IV.140 - change the fourth paragraph:
The conservation objectives for the talus habitat are to maintain its physical integrity and minimize microclimatic change. To meet these objectives, avoid conflict with the conservation of salmonid habitat, and promote cost effective forest management, naturally occurring talus fields ~~that are 1 acre or larger~~ shall be protected as follows:

pg. IV.140 and 141 - delete all four bullets at the bottom of page 140 and the first bullet on page 141 and replace with:
Nonforested Talus - defined as exposed talus with 30 percent or less canopy closure

- No timber harvest will occur in talus fields greater than or equal to 1 acre.
- No timber harvest will occur in talus fields greater than 1/4 acre in spotted owl NRF and dispersal habitat management areas in the Columbia Planning Unit, except for the western half of the Siouxon and 2 isolated sections near Highway 12 where no timber harvest will occur in talus fields greater than 1 acre.
- A 100 ft wide timber buffer will be applied around talus fields identified above. The buffer will be measured from the edge of the nonforested talus field, i.e. where canopy closure first exceeds 30 percent.
- Timber harvest in the buffer must retain at least 60 percent canopy closure. Any yarding within the buffer will protect the integrity of the talus field.

Forested Talus - defined as exposed talus with greater than 30 percent canopy closure

- Timber harvest may remove not more than 1/3 of standing timber volume each harvest rotation from forested talus not located in talus buffers.

Nonforested and Forested Talus

- Road construction through talus fields and buffers will be avoided, provided that the routing of roads will be accomplished in a practicable and

economically feasible manner, that is consistent with other objectives of a comprehensive landscaped-based road network planning process.

- The mining of rock from talus fields and buffers for road construction will be avoided, provided construction materials can be acquired in a practicable manner, consistent with other objectives of a comprehensive road network planning process.

If a functional relationship between relative density and canopy closure can be demonstrated, then relative density can be substituted for canopy closure in the above definitions of talus.

pg. IV.141 - change the third paragraph under CAVES:
The Washington Department of Fish and Wildlife definition of a cave is extraordinarily broad, and it is unlikely that all geomorphological features that fit this definition are important to wildlife. Under this HCP, when a cave is found, DNR shall determine, in ~~consultation~~ cooperation with ~~the Washington Department of Fish and Wildlife or~~ the U.S. Fish and Wildlife Service, whether it is important to wildlife habitat, and only those caves identified as important habitat shall be protected. The conservation objectives for such caves are to:

pg. IV.141 - change subparagraph (3):
(3) minimize human disturbance to bat hibernacula, and maternity colonies.

pg. IV.142 - change the first bullet on page:

- Roads shall not be constructed within 0.25 mile of a cave entrance, provided that the routing of roads around caves can be accomplished in a practicable ~~and economically reasonable~~ manner, consistent with other objectives of a comprehensive landscape-based road network planning process.

pg. IV.142 - change the second bullet on page:

- Where surface activities may disturb a cave passage, roads shall not be constructed within 300 feet of the cave passage, provided that the routing of roads around caves can be accomplished in a practicable ~~and economically reasonable~~ manner, consistent with other objectives of a comprehensive landscape-based road network planning process.

pg. IV.142 - change the fourth bullet:

- The location of caves will be kept confidential by DNR, ~~the U.S. Fish and Wildlife Service, and the Washington Department of Fish and Wildlife~~ to the extent permitted by law.

pg. IV.142 - change the third paragraph under CLIFFS:
The conservation objectives for cliff habitat are to minimize disturbance to geomorphic features and to protect species that inhabit cliffs. However, few management practices have been specifically developed for cliffs in managed forests. Therefore, management

prescriptions to meet these objectives shall be developed on a site-specific basis with consideration given to the following:

- During planning for harvest activities around cliffs greater than 25 tall and below 5,000 feet in elevation, DNR shall evaluate the cliff to determine if use by wildlife is likely (for example, are fissures/overhangs suitable for bats present, are ledges/perch trees suitable for nesting raptors present, etc.) and, if so, provide adequate protection measures including, but not limited to:
  a. protection of integrity of cliffs judged suitable and likely for wildlife use (for example, during felling/yarding, logs should not be allowed to disturb cliff face),
  b. retention of trees on cliff benches and along the base and top of cliffs judged suitable for nesting raptors, especially perch trees along the top of cliffs,
  c. avoidance of damage to significant cavities, fissures, and ledges

- All cliffs in excess of 150 feet in height will be evaluated for peregrine falcon use as described elsewhere in this HCP (see Minimization and Mitigation for Other Federally Listed Species in All Planning Units)

- All cliffs with known peregrine falcon aeries will be protected according to Forest Practice regulations and the commitments contained in this HCP for peregrines (see Minimization and Mitigation for Other Federally Listed Species in All Planning Units).

pg. IV.142 - change the last paragraph under the heading Cliffs:
The mining of rock from cliffs for road construction shall be avoided, provided construction materials can be acquired in a practicable ~~and economically reasonable~~ manner, and is consistent with other objectives of a comprehensive landscape-based road-network planning process.

pg. IV.143 - change first paragraph:
...In the area covered by the HCP, DNR manages about 4,000 acres of oak woodland (i.e., where oak is the primary tree species) and an additional 7,000 acres of mostly ponderosa pine stands in which oak is a significant associate ~~(DNR GIS 1995)~~ (i.e., where oak is a secondary or tertiary tree species), but only about 500 acres of oak woodland are in the five west-side planning units (DNR GIS 1995).

pg. IV.143 - change the first bullet in the fifth paragraph:
Oak woodlands shall be managed as follows:

- Partial harvest may occur in oak woodlands. Such harvest will:
  - retain all very large dominant oaks (greater than 20 inches dbh);
  - maintain 25 to 50 percent canopy cover~~, which include shrubs~~;
  - remove encroaching conifers, except western white pine; and

- retain standing dead and dying oak trees.

pg. IV.143 - change the third bullet in the fifth paragraph:

- Road construction through oak woodlands shall be avoided, provided that the routing of roads around oak woodlands can be accomplished in a practicable ~~and economically reasonable~~ manner, consistent with other objectives of a comprehensive landscape-based road network planning process.

pg. IV.144 - change the first four bullets in the fourth paragraph:

DNR shall conserve the habitat elements provided by large, structurally unique trees as follows:

- ~~At least two live trees shall be retained for each acre harvested.~~

- When selecting trees for retention, a preference shall be shown for large trees with structural characteristics important to wildlife, or those considered to be old-growth remnants.

- At least ~~half of the trees~~ 1 tree per acre selected for retention shall belong to the largest diameter ~~size classes~~ class of living trees in the ~~harvest management~~ unit before harvest (by 2-inch increments). At least 1 other tree per acre shall belong to the dominant crown class.

- The trees selected for retention will be left in the harvest unit where practicable, and may be clumped to improve wildlife habitat, protect trees from severe weather, or facilitate operational efficiency, but where practicable, the density of clumps may not be less than 1 clump per 5 acres.

pg. IV.144 - add new heading and paragraph at bottom of page:

SNAGS

DNR shall conserve the habitat elements provided by large snags as follows:

- At least three snags shall be retained for each acre harvested, on average. DNR will try to leave all snags where safe and practical.

- If available, snags retained will be at least 15 inches dbh and 30 ft tall. DNR will try to leave all snags where safe and practical.

- Priority for retention will be given to large hollow snags, hard snags with bark, and snags that are at least 20 inches dbh and 40 feet tall.

- At least five live trees shall retained permanently for each acre harvested, on average. Two of these trees will be as described in the section on large, structurally unique trees. The other three trees per acre will belong to the dominant, codominant, or intermediate crown classes, and, when available, will have at least one-third of their height in live crown.

- Priority for retention will be given to tree species which have a propensity to develop cavities (e.g., maple), but the stand tree species diversity after harvest should be generally representative of the tree species diversity prior to harvest.

- If fewer than three snags per acre are available prior to harvest, or if fewer than three snags can be left because of safety concerns, additional live trees will be retained so that the total number of stems per acre retained after harvest is, on average, at least 8 per acre. If additional live trees belong to the co-dominant or intermediate crown classes, and when available, will have at least one-third of their height in live crown. If intermediate crown-class trees are retained, shade-tolerant species with at least 1/3 of height in live crown will be selected.

- Snags and trees selected for retention within the harvest units may be clumped to improve wildlife habitat, protect trees from severe weather, or facilitate operational efficiency, but where practicable, the density of clumps may not be less than one clump per five acres.

- Snags and trees selected for retention will pose no hazard to workers during harvest operations per safety standards of the Washington Department of Labor and Industries (WAC 296-54 WAC).

pg. IV.144 - and second new heading and paragraph at bottom of page:
BALDS
Road construction through balds shall be avoided, provided that the routing of roads around balds can be accomplished in a practicable manner and is consistent with other objectives of a comprehensive landscape-based road network planning process.

pg. IV.144 - add third new heading and paragraph at bottom of page:
MINERAL SPRINGS
Mineral springs provide important resources for certain animal species, e.g., the band-tailed pigeon (*Columbia fasciata*). To prevent or reduce adverse impacts to this landscape feature and the wildlife species associated with it, DNR will cooperate with the U.S. Fish and Wildlife Service in planning management activities within 200 feet of known mineral springs. Such activities will be designed to (1) retain adequate trees for perching, and (2) maintain berry, fruit, and mast producing shrubs and trees, particularly in openings near mineral springs. Trees harvested near mineral springs will be felled away from the spring. DNR will avoid crossing mineral springs with yarding equipment

and will prohibit the crossing of mineral springs by ground-based logging equipment. Residual large green trees and snags within 25 ft of mineral springs will be left, and either clumped or scattered depending upon operational feasibility. In addition, DNR will continue to minimize the use of herbicides as directed by Forest Resource Plan Policy No. 33.

Species by Species Conservation for Unlisted Species of Concern	No change
Mollusks	No change
Arthropods	No change

Fish

pg. IV.146 - change the bullets (2) and (3) and add a fourth to the first paragraph:
(2) protecting lakes and ponds classifies as Types 1, 2, and 3 waters; ~~and~~

(3) protecting Types 1, 2, 3, and 4 rivers and streams; and

(4) treating Type 4 and 5 waters documented to contain fish that are proposed candidates for federal listing as Type 3 waters, if appropriate.

Amphibians	No change
Reptiles	No change

Birds

pg. IV.151 - change fifth paragraph:
Large, structurally unique trees and large hollow snags will be protected as described previously in the subsection titled Protection of Uncommon Habitats...

pg. IV.152 - insert between forth and fifth paragraphs:
Conservation measures for large snags and large, structurally unique trees will retain structural elements required by pileated woodpeckers for nesting and roosting. Additional conservation measures for snags will increase the density of snags, and consequently, opportunities for foraging.

pg. IV.152 - change fifth paragraph:
~~In addition,~~ Consistent with RCW 77.16.120, trees or snags that are known to contain active pileated woodpecker nests will not be harvested. In addition, trees or snags that are known to have been used by pileated woodpeckers for nesting will not be harvested. Green tree and snag retention are subject to the safety standards of the Department of Labor and Industries (WAC 296-54).

pg. IV.153 - delete the first paragraph entirely and replace with:
Conservation measures for large snags and large, structurally unique trees will retain structural elements required by purple martins for nesting.

pg. IV.153 - change the third paragraph:
Even-aged forest management throughout the five west-side planning units will continue to provide openings suitable for breeding, foraging, and resting habitat. ~~Snags will be retained according to state Forest Practices Rules. Under WAC 222-30-020 (11), three wildlife reserve trees (typically snags) are left for each acre harvested in western Washington. The wildlife reserve trees must be 10 or more feet in height and 12 or more inches dbh. These minimum sizes do not guarantee that wildlife trees suitable for western bluebirds will be retained. The retention of large, structurally unique trees, as described previously in the subsection titled Protection of Uncommon Habitats, will provide a source for large snags~~. Conservation measures for large snags and large, structurally unique trees will retain structural elements required by western bluebirds for nesting.)

Mammals

pg. IV.153 - change the last sentence on page:
Talus fields, cliffs, and caves will be protected as described previously in the subsection titled Protection of Uncommon Habitats, and DNR will also protect large, structurally unique trees and large snags as described in the same subsection.

pg. IV.155 - insert a new paragraph before Additional Mitigation:
Conservation measures for large snags and large, structurally unique trees will retain structural elements required by fishers for denning and resting.

pg. IV.155 and 156 - delete the last paragraph on page 155 and the first paragraph on 156 and replace with:
In addition, under WAC 222-16-080 of the state Forest Practices Rules, the Forest Practices Board may adopt rules pertaining to management activities which impact western gray squirrels. These rules would provide further protection of the species' critical wildlife habitat.

Summary of Habitat Types Provided on DNR-managed Forest Lands in the Five West-side Planning Units

pg. IV.159 - change the heading at the top of the page:
HABITATS PROVIDED ON DNR-MANAGED LANDS ~~NOT SUBJECT TO SPECIFIC HCP REQUIREMENTS~~

pg. IV.159 - delete first paragraph subheading and replace paragraph with:
After a natural disturbance, such as fire, a stand regenerates and develops through a succession of seral stages. Managed forests follow a similar pattern of succession following clearcut timber harvest. A variety of wildlife habitats on DNR-managed lands will occur in the different seral stages (Brown 1985) described below:

pg. IV.159 - change last paragraph on page:
Table IV.13 lists ~~examples of representative species that could use the types of habitat expected to be provided under the HCP on DNR-managed lands in the five west-side planning units~~ the types of habitat expected to be provided under the HCP on DNR-managed lands in the five west-side planning units. Examples of representative species that might use that habitat type, management activities that may be conducted, potential negative impacts that may result from the management activities, and benefits expected to accrue from the HCP are given for each habitat type. Additional details regarding the management activities are included in Section H (Forest Land Management Activities) of this chapter.

pg. IV.162 - add the following heading and paragraph after Table IV.13:

Provision of a Range of Forest Types Across the HCP Landscape

DNR management activities that will occur under the HCP will ensure a range of forest types in adequate amounts to provide for multi-species conservation across the landscape covered by the HCP. DNR has modeled the age-class distribution that will likely result from expected management under the HCP and existing policies. Results from this modeling have been used to develop a table (see Table IV.14) of expected percentages of each of several forest habitat/structural types, using age-class as a surrogate, that would likely exist 100 years following implementation of such management.

pg IV.163-167 - delete this section entirely and replace with:

G. Conservation Assessments for Federally Listed Plant Species, Candidate Plant Species, and Plant Species of Concern

In general, the federally listed and proposed endangered and threatened plant taxa described below have very limited ranges and narrow habitat requirements and are restricted to very small areas. Because of these factors, it is anticipated that they can be effectively managed while meeting other land-management objectives. DNR maintains a database on these species, including both site-specific and species-specific information,

that will be useful in locating and protecting known sites and potential habitat. However, no comprehensive inventories of these species exist for DNR-managed lands.

Federally Listed Plant Species

Brief statements about each species are provided below; additional information can be obtained from either the U.S. Fish and Wildlife Service Endangered Species office in Olympia or DNR's Natural Heritage Program.

ARENARIA PALUDICOLA

Swamp sandwort was historically known to occur in "swamps near Tacoma" but has not been seen or collected in Washington since the late 1800s. Reports from several other western Washington locations have been determined to be misidentifications. However, additional inventory in Washington is needed, primarily in wetlands within the Puget Lowlands. The only known extant site in the world is found in a brackish wetland in California. However, this species could occur in wetlands near the Pacific Coast, Willapa Bay, or Puget Sound. The HCP for the west-side planning units and the OESF would likely provide better protection of this species' habitat because of their better overall wetland and riparian protections.

HOWELLIA AQUATILIS

Water howellia is an aquatic annual generally found in vernal ponds or portions of ponds in which there is a significant seasonal draw down of the water level. All known ponds have a deciduous tree component around their perimeters; most have conifers as well. The species is currently known to occur in Washington, Idaho, and Montana. In Washington, it has been found in Clark, Pierce and Spokane Counties. Historically it was also known to occur in Thurston and Mason Counties, as well as in Oregon and California. There has been no inventory of water howellia on DNR-managed lands, but if water howellia does occur in the planning area, then the HCP would reduce adverse effects because it offers better overall wetlands protection.

LOMATIUM BRADSHAWII

Bradshaw's lomatium was thought to be endemic to the Willamette Valley in Oregon until 1994, when it was discovered in Clark County, Washington. The one site in Washington is a seasonally flooded wetland dominated by grasses, sedges and rushes. As far as is now known within the HCP planning area, this species is restricted to wetlands in flood-plain habitats at low elevations in the Columbia Planning Unit. Although not known to occur on DNR-managed lands, some DNR-managed lands may provide potential habitat. The HCP provides better protection of this species' habitat because of its better overall wetland and riparian protections. The OESF would have no effect, as the species is not known or expected to occur in the planning unit.

SIDALCEA NELSONIANA

Nelson's checkermallow was also thought to be restricted to Oregon until relatively recently. There are known sites in Cowlitz and Lewis Counties, Washington. These sites are in low elevation, moist meadows within the South Coast and Columbia HCP planning units. These sites may qualify as wetlands. There is a limited amount of DNR-managed land that contains suitable habitat. There is expected to be no change regarding the

effects of management on this species due to its restriction to open, moist meadow habitats.

Plant Species Proposed for Federal Listing

CASTILLEJA LEVISECTA

Golden paintbrush occurs from Thurston County northward to Vancouver Island. Historically it was also known to occur in the Willamette Valley in Oregon and in Clark County, Washington. The species is restricted to grasslands and areas dominated by a mixture of grasses and shrubs. Although this species occurs in grasslands, it could be affected by timber harvest through road building, yarding, or decking logs on adjacent grasslands. Where conifers invade *C. levisecta* habitat, the removal of trees is beneficial to the species. There are only 10 known sites with *C. levisecta* in the world, eight of which are in Washington and one of these is a DNR-managed natural area preserve. All sites are quite small in area and are subject to a variety of threats, the most serious of which is the invasion by a mixture of Douglas-fir, Scot's broom, blackberries, and roses. It is not known to occur, nor is it expected to occur within the OESF. There is little to no DNR-managed land adjacent to sites that harbor this species. The HCP is not expected to have any effect on this species.

Federal Candidate Plant Species

There is one vascular plant species that is a candidate for listing (as of February 1996) under the federal ESA which is known to occur, or is reasonably suspected of occurring, within the HCP planning area. Additional information about this species can be obtained from DNR's Natural Heritage Program.

SIDALCEA OREGANA VAR. *CALVA*

This taxon is restricted to the Chelan Planning Unit. It may occur on DNR-managed forest land. It can occur along small riparian areas and some of the sites would qualify as wetlands. The HCP can be expected to provide better protection due to the overall better riparian zone and wetlands protections. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

Plant Species of Concern

There are a number of vascular plant taxa that are species of concern to the U.S. Fish and Wildlife Service (as of February 1996) which are known to occur, or are reasonably suspected of occurring, within the HCP planning area. Additional information about these species can be obtained from DNR's Natural Heritage Program.

ABRONIA UMBELLATA SSP. *ACUTALATA*

This taxon is thought to be extirpated from the state of Washington. The historic locations were coastal sand dunes. Timber management under the HCP and OESF would have no effect.

ARTEMISIA CAMPESTRIS SSP. *BOREALIS* VAR. *WORMSKIOLDII*

This taxon is restricted to areas immediately adjacent to the Columbia River in Grant and Klickitat Counties. The areas do not support conifers and are far enough removed from DNR forest management that management activities are not likely to have any impact.

ASTER CURTUS

This taxon is restricted to grassland habitats in the lowlands of the Puget trough. It may occur in grasslands adjacent to DNR-managed forest land. It is not known nor expected to occur on the OESF. Because the plant is generally restricted to nonforested habitats, the HCP and the OESF are expected to have little effect on this species.

ASTRAGALUS AUSTRALIS VAR. *OLYMPICUS*

This taxon is restricted to relatively high elevations in the northeastern portion of the Olympic Peninsula. It is only known to occur in the Olympic National Park and Olympic National Forest.

ASTRAGALUS PULSIFERAE VAR. *SUKSDORFII*

In Washington, this taxon is restricted to the Klickitat Planning Unit and occurs in somewhat open ponderosa pine stands with a relatively sparse understory. One known site of *A. pulsiferae* is on DNR-managed land designated as a Dispersal habitat management area. Higher harvest levels may provide better habitat protection for this taxon than lower harvest levels. However, increased harvest levels may not be a recommended method for enhancing the habitat for this taxon; prescribed burns, or allowing natural fires to burn, would likely be a preferable method. The OESF would have no effect, as the taxon is not known or expected to occur on the OESF.

ASTRAGALUS SINUATUS

This taxon does not occur within the HCP planning area. It is restricted to a very small range east of the planning area in Chelan County

BOTRYCHIUM ASCENDENS

This taxon appears to have a fairly broad ecological amplitude and wide geographic range. However, there is insufficient information available regarding its response to timber harvest activities to evaluate the HCP and its effects.

CALOCHORTUS LONGEBARBATUS VAR. *LONGEBARBATUS*

In Washington, this taxon is restricted to the Klickitat Planning Unit. It could occur on DNR-managed lands. It occurs primarily in open grasslands, but occasionally extends into open forest stands. Within the Yakama Indian Reservation, it can be found within harvested units and along roadway openings. Although this taxon could benefit from timber harvest in areas adjacent to meadow openings, it is anticipated that there will be no change regarding the effects of management on this species. The OESF will have no effect since the taxon is not known or expected to occur on the OESF.

CASTILLEJA CRYPTANTHA
This taxon does not occur and is not expected to occur, on DNR-managed lands within the HCP planning area. It is restricted to subalpine and alpine meadows around the northern perimeter of Mt. Rainier.

CIMICIFUGA ELATA
This taxon occurs in DNR Dispersal management areas and potentially within NRF management areas. The taxon occurs within the North Coast, Straits, South Puget, South Coast, and Columbia planning units. The HCP is expected to be beneficial due to the lower timber harvest levels in NRF and Dispersal management areas. The OESF would have no effect, since the taxon is not known or expected to occur on the OESF.

CORYDALIS AQUAE-GELIDAE
This taxon occurs primarily along Types 3 through 5 waters, including small seeps, and is restricted to the Columbia Planning Unit. It could occur on DNR-managed lands. The HCP is expected to provide better protection due to the overall better riparian zone protections.

CYPRIPEDIUM FASCICULATUM
This taxon occurs within a variety of coniferous stands within the Klickitat, Yakima, and Chelan planning units. It could occur on DNR-managed lands. There is insufficient information available regarding this species' response to timber harvest activities to evaluate the HCP and its effects.

DELPHINIUM LEUCOPHAEUM
This taxon is essentially a grassland species and is restricted to the South Coast Planning Unit. It could occur on DNR-managed lands. The HCP is expected to have no effect on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

DELPHINIUM VIRIDESCENS
This taxon is restricted to the Chelan and Yakima planning units. It may occur on DNR-managed lands. It can occur along small riparian areas and some of the sites would qualify as wetlands. The HCP can be expected to provide better protection due to the overall better riparian zone and wetlands protections. The OESF is expected to have no effect since the taxon is not known or expected to occur on the OESF.

DODECATHEON AUSTROFRIGIDUM
In Washington, this taxon is currently known only to occur in the Mt. Colonel Bob Wilderness Area of the Olympic National Forest. However, in Oregon it is known to occur in lower elevation riparian areas. The HCP and the OESF would presumably provide better protection due to overall better riparian zone protections.

ERIGERON HOWELLII
In Washington, this taxon is restricted to the Columbia Planning Unit. It generally occurs in open areas. Canopy removal is not expected to have a negative impact, but ground-disturbing activity might. There is insufficient information to analyze how the HCP

would affect this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

ERIGERON OREGANUS

In Washington, this taxon is restricted to the Columbia Planning Unit. It occurs within owl dispersal habitat; however, it is found primarily on exposed rock. Canopy removal will not generally have a negative impact. There is probably no change regarding the effects of management on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

FILIPENDULA OCCIDENTALIS

In Washington, this taxon is restricted to river and creek banks in southwest Washington, in the Columbia and South Coast HCP planning units. Some DNR-managed land is relatively close to known sites for this taxon. It is expected that the HCP could provide more protection because of its better riparian protections. The deferrals and protections for the marbled murrelet provided by the HCP could also benefit this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

HACKELIA VENUSTA

This taxon is restricted to the Chelan Planning Unit. All known sites are on USFS lands. Some DNR-managed land occurs within the range of this species. Canopy removal would not have a negative impact and in fact might be beneficial. However, ground-disturbing activities could have a negative impact. At present, there is insufficient data to analyze the HCP and its potential effects on this species.

LATHYRUS TORREYI

This taxon was thought to be extirpated from the state of Washington. The historic locations were scattered in Clark and Pierce Counties. The only extant site is at McChord Air Force Base, where it inhabits a mature conifer stand with an open understory. Timber management on DNR-managed lands under the HCP and OESF is unlikely to have an adverse effect.

LOMATIUM SUKSDORFII

In Washington, this taxon is restricted to the Klickitat Planning Unit. It may occur on DNR-managed lands. It can occur within riparian areas, but it is not restricted to such areas. It occurs on slopes that may support scattered individual conifers, on the edges of conifer stands, or in stand openings. There is likely no change regarding the effects of management on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

LOMATIUM TUBEROSUM

This taxon is restricted to talus slopes, mostly in nonforested areas, although there can be trees adjacent to the talus. Conservation measures for talus slopes will benefit this species. Within the HCP planning area, this taxon is known only to occur within the Yakima Planning Unit.

LUPINUS SULPHUREUS VAR. *KINCAIDII*

This taxon is essentially a grassland species and, in Washington, is restricted to the South Coast Planning Unit. It is unlikely to occur on DNR-managed lands. The HCP is expected to have no effect on this species. The OESF is expected to have no effect since the taxon is not known or expected to occur on the OESF.

MECONELLA OREGANA

This taxon occurs in grasslands, sometimes adjacent to forested areas, although generally in somewhat savannah-like conditions. It is expected that there would no change regarding the effects of management on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

MIMULUS JUNGERMANNIOIDES

This taxon was historically known to occur in the Klickitat Planning Unit, but is currently thought to be extirpated from the state of Washington. It is restricted to seepage areas in exposed basalt. It is unlikely to occur on DNR-managed lands. The HCP is not expected to have any impact on this taxon. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

PENSTEMON BARRETTIAE

This taxon occurs primarily on exposed basalt in Washington and is known to occur only in the Klickitat Planning Unit. It may occur on DNR-managed lands. It may occur within riparian areas, although it is not restricted to riparian areas. There is expected to be no change regarding the effects of management on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

PETROPHYTUM CINERASCENS

This taxon is within the very eastern edge of the Chelan Planning Unit. In fact, it is restricted to rock outcrops adjacent to the Columbia River.

RANUNCULUS RECONDITUS

This taxon is known to occur in Klickitat County, but not within the HCP planning area.

RORIPPA COLUMBIAE

This taxon is restricted to the immediate shores of the Columbia River and islands in the Columbia River along the Hanford Reach and in Skamania County. No DNR-managed lands are known to harbor this species and timber management under the HCP is not expected to have an impact.

SILENE SEELYI

This taxon is restricted to cracks in exposed rock in a small portion of the Chelan, and maybe the Yakima, planning units. Although it is not known to occur on DNR-managed lands, some DNR-managed lands are in close proximity to known locations for this species. The species is probably not affected to any great degree by canopy removal. It is expected that there would be no change regarding the effects of management on this species.

SISYRINCHIUM SARMENTOSUM

In Washington, this taxon is restricted to the Klickitat Planning Unit. It may occur on DNR-managed lands. It occurs in moist meadows and small forest openings, and it may be occur in riparian and/or wetland areas. The HCP can be expected to provide better protection due to the better riparian and wetland protections. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

SULLIVANTIA OREGANA

In Washington, this taxon is known to occur only in the Columbia Planning Unit and occurs within waterfall spray zones and seepage areas. A site with *S. oregana* is located in a DNR-managed natural area preserve, and other sites may occur in DNR-managed parcels adjacent to the preserve. The HCP is expected to provide better protection because of its better riparian and wetland protections The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

TAUSCHIA HOOVERI

This taxon is restricted to lithosolic, nonforested habitats. It is known to occur on DNR-managed land. It occurs mostly east of the HCP planning area, although some sites are within the Yakima and perhaps the Klickitat planning units.

TRIFOLIUM THOMPSONII

This taxon is known to occur only in the Chelan Planning Unit. It is a grassland species, but it also occurs on the edge of forest stands. Fire is important in maintaining its habitat. This species is known to occur on DNR-managed lands. There is expected to be no change regarding the effects of management on this species. The OESF would have no effect since the taxon is not known or expected to occur on the OESF.

H. Forest Land Management Activities

Introduction

pg. IV.169 - change third paragraph:

The ranges of activity level (summarized in Table IV.~~14~~ 15 at the end of this section) are based upon (1) historical levels, (2) estimates of activity required to achieve conservation objectives in the harvest simulator model, (3) evaluation of current criteria for selecting potential forest stands for various silvicultural treatments, and (4) estimates from DNR Regions of the level of activity that could occur operationally over the next decade...

pg. IV.170 - delete entire fifth paragraph

Activities Common to All Planning Units

pg. IV.171 - add to the first paragraph on pg: 171:

...The rate of land transactions will be influenced by opportunity and funding. (See the Implementation Agreement.) Land transactions are not expected to increase the level of take for any species covered by the incidental take permit. DNR commits to maintaining the conservation objectives described in Chapter IV of the HCP in the course of its land

disposition program, as outlined in the Implementation Agreement. In the event that a land disposition increases the level of take, or if land disposed of by DNR does not remain subject to the HCP and the cumulative impact of the disposition would have a significant adverse effect on a particular species, DNR will follow the process for making a major amendment to the HCP and the ITP as outlined in the Implementation Agreement. The land transaction program is not intended to alter DNR's obligations for mitigation as set forth in this HCP.

pg. IV.171 - change paragraph under heading Nontimber Resources and add:
...DNR markets nontimber resources that include but are not limited to road use permits, sand and gravel sales, sales of special forest products such as boughs and brush, prospecting leases and mining contracts, oil and gas leases, grazing permits and leases, electronic site leases, and other special permits, licenses, sales, and leases. ~~(See the Implementation Agreement.)~~ At the 1996 level of these activities, no take, or insignificant (i.e., *de minimis*) take is occurring. Beginning no later than January 1, 1999, new/renewed permits, contracts, or leases for such activities will include the commitments of the HCP, such that they will not increase the level of take beyond a *de minimis* level. The level of impact resulting from these activities will be reviewed by DNR and the Services during the annual meetings as described in subsection 16.2b of the Implementation Agreement. DNR will monitor the level of such activities and provide this information to the Services prior to their annual meetings.

Many nontimber resource activities are subject to review under SEPA (WAC 197-11). Except for those actions that are categorically exempt (WAC 197-11-800), other government agencies and interested parties are notified of proposed actions as required by SEPA. As a matter of course, DNR notifies the Department of Fish and Wildlife, Department of Ecology, and the appropriate county and tribal governments. Government agencies and interested parties are notified by issuing either a determination of nonsignificance, a mitigated determination of nonsignificance, a public scoping notice, or a draft IS. Agencies and interested parties can comment on and appeal the findings of the SEPA determination.

Current DNR nontimber resource uses are described, including the current level of each activity, below:

Rights of way - Policy No. 26 of the Forest Resource Plan addresses granting public rights of way. It says:

> "The department will grant rights of way to private individuals or entities when there is an opportunity for enhancing trust assets and when detriments are offset."

Easements for rights of way are granted for roads, powerlines, and pipelines. During the 9-year period between 1983 and 1991, approximately 2,100 rights-of-way were issued. These involved approximately 105 miles of new road construction and removed approximately 2,500 acres from timber production. Typically, these roads are part of the same road network used for forest management and would be subject to the same conservation measures for design, construction, use, maintenance, and abandonment

described in the HCP. Large powerline and pipeline rights of way are subject to review under SEPA.

DNR has adopted the following SEPA policy for granting rights of way (WAC 332-41-665):

> "Recognizing that construction and/or reconstruction under upland right of way grants can create adverse impacts to the elements of the environment, it is the policy of the department to condition grants where necessary:
>
> (i) to protect all surface resources including but not limited to soil and water, through authorized right of way operation on public lands, and to cause rehabilitation or reestablishment on a continuing basis the vegetative cover, soil stability, and water condition appropriate to intended subsequent use of the area;
>
> (ii) to meet air quality standards; and
>
> (iii) to protect recreational and special use areas under lease by requiring mitigating action."

Special Forest Products - Policy No. 8 of the Forest Resource Plan addresses special forest products. It says:

> "The department will encourage and promote the sale of special forest products where appropriate and will market them in a manner consistent with the overall policies of this plan."

western greens (salal, beargrass, huckleberry, rushes, ferns, mosses) - Currently there are approximately 65 leases covering 30,000 acres (average 460 acres/lease) and 240 one-year individual, nonexclusive permits for designated blocks of DNR-managed land. Over the term of the HCP, it is expected that individual permits will slightly increase and the amount of leased acreage will decrease. The long-term decrease in leased acreage is projected from the current trend in decreasing U.S. share of the international market in floral greens. Collection of branches from salal, evergreen huckleberry, and ferns is a self-limiting process because only part of foliage of any plant meets commercial quality standards. Thus, harvesting practices result in retention of most of the plant, and consequently a photosynthetic base for the regeneration of new foliage (USFS 1995). No significant environmental damage has been observed as a result of DNR leases, though no formal assessment has been conducted. The long-term ecological effects of floral green collection are unknown. Monitoring of such activities would allow for adjustment of lease conditions should adverse environmental impacts be documented. Collection of moss has potential negative environmental impacts (FEMAT 1993). Collection of moss from DNR-managed lands is not currently a large program. Should this situation change, however, some monitoring of effects of moss collection and/or regulation of moss collection may be needed. Leases for brush picking are categorically exempt from SEPA review (WAC 197-11-800). Actions or activities that are categorically exempt are those that would not normally have significant adverse environmental impacts. An action or activity that is categorically exempt may be subject to review under SEPA if it occurs in an environmentally sensitive area. For example, a categorically exempt action occurring in a wetland or in an area with a state listed species may be subject to review under SEPA.

Christmas greens (cut noble fir, silver fir, white pine, red cedar, and Douglas fir boughs) - There are 14 current 1- to 3-year sales involving 9,000 acres total and 3, 10-year leases

involving 3,000 acres total. Additionally, small volumes under $1,000 in value and involving less than 1,000 acres are permitted to approximately 15 individuals or small companies per year. A determination of nonsignificance was issued under SEPA for the collection of Christmas greens.

mushrooms - No commercial harvesting is allowed. Recreational harvesting is allowed with restrictions on quantity. Recreational harvest is limited to 3 gallons per person per day of a single species and no more than 9 gallons per person per day total. Compliance is not currently monitored and some commercial-scale harvest may be occurring on DNR-managed lands. Most mushroom harvesting on DNR-managed lands occurs in the South Puget Sound planning unit, with some occurring on the Olympic Peninsula and in the western portion of the Klickitat Planning Unit. Individual commercial permits are currently under consideration. Over the term of the HCP, it is expected that harvest from the wild will increase. It is likely that access to lands for mushroom collection will diminish due to road closures. Mushroom collection does not appear to occur very distant from roads. Most edible mushrooms are the fruiting bodies of ectomycorrhizal fungi, which play important roles in forest ecosystem processes, including providing forage for northern flying squirrels, which are an important prey item of spotted owls. The long-term ecological effects of mushroom collection are unknown (FEMAT 1993). No environmental impact assessment of mushroom collection has been conducted specifically on DNR-managed lands. It is thought that the highest potential for negative damage to the resource could come from disruptive collection methods such as raking (USFS 1995). This type of collection method has not been widely observed on DNR-managed lands. Monitoring of mushroom collection levels and utilization of any relevant research on the ecological effects of mushroom harvesting would assist in HCP implementation.

Christmas trees - There are currently 5 leases to grow Christmas trees on DNR-managed lands covering less than 600 acres. All current leases expire within the next 8 years. It is not expected that this program will expand in the future, and may be eliminated altogether due to lack of market demand. Leases for Christmas tree harvesting are categorically exempt from SEPA review (WAC 197-11-800).

medicinals - DNR is not involved in any medicinal research or management at this time. There are 1 to 2 small-value annual permits (for example, cascara bark).

firewood - The Revised Code of Washington (RCW 76.20) requires that DNR offer firewood, up to 6 cords per person per year, for free and authorizes direct sales and bid/auction sales. In most Regions, demand for free personal use firewood is greater than supply. The Regions make available what they can and there is no estimate available for the amount of material removed or the acreage involved. Wood collected as personal use firewood is generally down logs located near roads or landings. Over the course of the HCP, it is expected that firewood removal will decrease because of more restrictions on woodstove use in urban areas and concerns for wildlife and biomass loss. At present, licenses or approvals for firewood removal are categorically exempt from SEPA review (WAC 197-11-800).

Valuable Material Sales- Sand and gravel sales are handled under sale contracts. Current contracts cover approximately 30 to 40 acres each and total less than 1,000 acres. Most commercial contracts do not apply to forested areas. However, 15 to 20 commercial contracts are in forested areas, including some smaller pits that are primarily for DNR use but from which occasional loads are sold to other forest land managers. If the sand or gravel material is sold, then the activity is subject to review under SEPA, and the purchaser is responsible for obtaining all necessary permits. DNR has adopted a SEPA policy for surface mining (WAC 332-41-665), described below, that applies to sand and gravel mines which are subject to SEPA.

Water quality in the vicinity of sand and gravel mines is protected through the National Pollutant Discharge Elimination System Permit Program (WAC 173-220). The Department of Ecology administers this program and issues NPDES permits only to facilities that can meet the surface and groundwater standards described in WAC 173-201A and WAC 173-200, respectively.

The purchaser must file a plan of operations that is reviewed by the DNR administrative Region. Under the HCP, the plan of operations would be reviewed to ensure compliance with the commitments of the HCP. Exploration holes drilled on DNR-managed land in search of sand and gravel deposits are plugged and the site restored. For example, if the site was used for timber production before exploration, then, where feasible, the site is restored for continued timber production. The reclamation of surface mines, excluding those used for on-site forest road construction or maintenance, is regulated by the Surface Mining Act (RCW 78.44), which is enforced by DNR.

Prospecting Leases/Mining Contracts - A mineral prospecting lease permits the lessee to prospect for metallic and industrial (nonmetallic) minerals. The lease must be converted to a mining contract before mine development or operations commence. There are 13 existing leases in the HCP Planning Area. Most prospecting leases are 500 to 600 acres. Activities conducted under mineral prospecting leases are exempt from SEPA, unless it is determined that a specific activity needs to undergo a SEPA review. The lessee is responsible for obtaining all necessary permits, although there are limited permits required for exploration. Before any surface disturbing work is conducted on a leased area, the lessee must file a plan of operations that is reviewed by the DNR administrative Region. Under the HCP, the plan of operations would be reviewed to ensure compliance with the commitments of the HCP. Exploration holes drilled on DNR-managed land in search of mineral deposits are plugged and the site restored. Roads may be constructed during mineral exploration. Typically, these roads are part of the same road network used for forest management and would be subject to the same conservation measures for design, construction, use, maintenance, and abandonment described in the HCP.

There are 17 mining contracts in the HCP Planning Area, but there are no active open-pit metallic or open-pit industrial mineral mines or underground mines on DNR-managed land. The only activity occuring under these contracts is exploration. Conversion of a mineral prospecting lease to a mining contract requires a phased review under SEPA. This review is phased since the location and scope of future activities is not known. An

EIS may be required if large-scale mining is contemplated. DNR has adopted the following SEPA policy for surface mining (WAC 332-41-665):

> "To provide that the usefulness, productivity, and scenic values of all lands and waters involved in surface mining within the state will receive the greatest practical degree of protection and restoration, the following aspects of surface mining will be conditioned:
>
> (i) proposed practices to protect adjacent surface resources;
>
> (ii) specifications for surface gradient restoration to a surface suitable for the proposed subsequent use of the land after reclamation is completed, and proposed method of accomplishment;
>
> (iii) matter and type of revegetation or other surface treatment of disturbed areas;
>
> (iv) method of prevention or elimination of conditions that will create a public nuisance, endanger public safety, damage property, or be hazardous to vegetative, animal, fish, or human life in or adjacent to the area;
>
> (v) method of control of contaminants and disposal of surface mining refuse;
>
> (vi) method of diverting surface waters around the disturbed area;
>
> (vii) method of restoration of stream channels and stream banks to a condition minimizing erosion and siltation and other pollution."

Any mining activities would comply with the commitments of the HCP.

Water quality in the vicinity of underground and open pit mines is protected through the National Pollutant Discharge Elimination System Permit Program (WAC 173-220). The Department of Ecology administers this program and issues NPDES permits only to facilities that can meet the surface and groundwater standards described in WAC 173-201A and WAC 173-200, respectively.

Metals mining and milling is regulated by the Metals Mining and Milling Operations Act (RCW 78.56), which is mainly enforced by the Department of Ecology. An EIS is required for any proposed metal mining and milling operation. Any tailings facility must be designed to prevent the release of pollution and a waste rock management plan that emphasizes pollution prevention must be approved by the Department of Ecology (RCW 78.56.100). In Washington, there is a moratorium on the use of heap leach extraction processes and a prohibition on *in situ* extraction processes (RCW 78.56.160).

Another type of mining that could occur on DNR-managed forest land over the term of the HCP is placer mining. There are no commercial placer mines on DNR-managed forest lands, nor are there any commercial placer prospecting leases or mining contracts. But, recreational placer mining is growing in popularity. Recreational prospecting permits are issued by DNR (RCW 79.01.651). DNR establishes the rules for the location, equipment, methods, and other appropriate permit conditions of recreational prospecting on DNR-managed lands. Commercial placer prospectors and miners must obtain a hydraulic project approval permit from the Department of Fish and Wildlife (WAC 220-110), a NPDES permit from the Department of Ecology, a permit from the U.S. Army Corps of Engineers, and the action is subject to review under SEPA.