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Forest Service

Pacific Northwest Region

2008

Road Decommissioning for Aquatic Restoration

Environmental Assessment

Barlow, Hood River, & Zigzag Ranger Districts
Mt. Hood National Forest; Clackamas and Hood River Counties, Oregon

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A Forest Service road once crossed this stream located on the Mt. Hood National Forest. The road was recently decommissioned restoring the stream to a natural condition and reducing the risk associated with the large fill located at this site.

Table of Contents

1.0. Purpose of and Need for Action

1.1 Introduction

In 1994, the Northwest Forest Plan recognized the need for watershed restoration, stating, "Watershed restoration will be an integral part of a program to aid in recovery of fish habitat, riparian habitat, and water quality" (p. B-30). In response, over the past fifteen years the Mt. Hood National Forest (the Forest) has accomplished numerous watershed restoration projects, including culvert replacement for improved fish passage, in-stream projects to create pools, riparian planting, and decommissioning over 400 miles of roads. Most recently, the Forest completed a forest-wide aquatic restoration project, which proposed to re-open side channels, plant native vegetation, and increase large-wood component in streams and floodplains. The Forest has also begun planning the Clackamas Road Decommissioning for Aquatic Restoration project to reduce adverse impacts to aquatic habitat in the Upper Clackamas Watershed.

Continuing with the Mt. Hood National Forest's long-standing efforts to improve watershed health, this environmental assessment (EA) analyzes the environmental effects for decommissioning approximately 84 miles of road across the Forest. Road decommissioning activities are proposed to improve hydrologic function and aquatic habitat in several high priority sixth-field subwatersheds. This EA analyzes three alternatives, including the Proposed Action and No Action alternatives; and the results of the analysis are captured in this document.

1.2 Document Structure

This environmental assessment is written to fulfill the purposes and requirements of the National Environmental Policy Act (NEPA), as well as to meet policy and procedural requirements of the USDA Forest Service. The intent of NEPA, its implementing regulations, and Forest Service policy is to evaluate and disclose the effects of proposed actions on the quality of the human environment. The document is organized into four parts:

- *Purpose of and Need for Action:* The section includes information on the history of the project proposal, the purpose and need for action, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

- *Alternatives, including the Proposed Action:* This section provides a more detailed description of the Proposed Action as well as the No Action Alternative and one other action alternative. This discussion also includes possible design criteria that were added as a result of environmental analysis.

- *Environmental Consequences:* This section describes the environmental effects of no action as well as the trade-offs and effects of implementing the Proposed Action and other action alternatives. This analysis is organized by resource area. Within each section, the existing environment is described first, followed by the estimated effects of no action that provides a baseline for evaluation, and finally the estimated effects of the Proposed Action and action alternative.

- *Consultation and Coordination:* This section provides agencies consulted during the development of the environmental assessment and a list of preparers.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Mt. Hood National Forest Supervisor's Office in Sandy, Oregon.

1.3 Background

The Mt. Hood National Forest (the Forest), working in collaboration with representatives from many local, state, federal, and tribal governments as well as non-governmental organizations, identified priority areas for watershed and aquatic habitat restoration within the Fifteenmile Creek, Hood River, and Sandy River basins. Between 2004 and 2007, a series of meetings and workshops were held in each basin to develop a basin-specific aquatic habitat restoration strategy[1] that:

- Identifies priority sixth-field subwatersheds in the basin that provide the cornerstone for addressing freshwater habitat restoration needs of resident and anadromous fish as well as water quality improvements.

- Describes the limiting factors affecting fish production and water quality.

- Identifies known restoration actions previously identified that will address limiting factors in priority watersheds.

- Identifies types of high priority restoration actions within particular watersheds where they are highlighted through a limiting factors analysis but have yet to be fully scoped and verified on-the-ground.

- Establishes the sequence in which actions should be pursued in order to achieve the maximum benefit.

- Provides a rough estimate of the restoration needs (i.e., quantity) and implementation costs by activity type for each of the sixth-field subwatersheds in the basin.

Prior to these efforts, many collaborative efforts in each basin focused on developing and implementing aquatic habitat restoration strategies and actions across the landscape; however, a single basin-wide strategy identifying priority watersheds, limiting factors, and priority hilltop-to-valley-bottom restoration actions had yet to be developed. The primary *goal* of each strategy is to *address aquatic habitat restoration needs for resident and anadromous fish species, while at the same time addressing needs for streamflow and water quality improvements.*

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[1] USDA Forest Service. November 2006. Hood River Basin Aquatic Restoration Strategy. Mt. Hood National Forest, Hood River Ranger District. Parkdale, OR.
USDA Forest Service. April 2007. Sandy River Basin Aquatic Restoration Strategy. Mt. Hood National Forest, Zigzag Ranger District. Zigzag, OR.
USDA Forest Service. (*in draft*) Fifteenmile Creek Basin Aquatic Restoration Strategy. Mt. Hood National Forest, Barlow Ranger District. Dufur, OR.

Each basin-wide strategy was developed in a collaborative manner, and relied heavily upon previous strategies, analyses, and assessments for each basin (i.e., watershed analyses, subbasin plans, Total Maximum Daily Load (TMDL) assessments, watershed council action plans, road-related fish passage barrier surveys, etc.). It is envisioned that each basin-wide strategy would be used to guide restoration investment over the long-term in a manner that will achieve tangible, aggregated restoration benefits at the watershed-scale as opposed to a scattered approach where many different restoration actions are implemented over a broad landscape making it difficult to detect restoration benefits.

Each basin-wide strategy, while somewhat unique and different, identifies geographic priority areas for restoration. Incorporated into determining priority areas are factors such as: 1) important areas of production for various fish species, 2) water quality, and 3) watershed condition. Collaborative partners involved in the development of each basin-wide strategy recognize that an effective restoration strategy must first focus on protecting the remaining high quality, productive aquatic habitats in the basin. This is believed to be the most effective and least costly means for ensuring healthy, intact aquatic habitat is maintained over the long-term.

In the fall of 2007, the Forest took a close look at the aquatic restoration needs of the priority watersheds, as identified by the basin-wide strategies. Soon there after, the Forest decided to look specifically at the impact the transportation system has on aquatic resources in the priority watersheds, and determined that roads would be the focus of immediate restoration efforts.

The Forest's decision to examine the transportation system and the risk it poses to downstream aquatic habitat was reinforced with the information found in the Mt. Hood National Forest Roads Analysis (2003). The Roads Analysis, which addressed both the access benefits and ecological impacts of road-associated effects, highlighted the fact that Forest Service budgets have not kept pace with what it costs to maintain all roads so they are functioning properly. With this trend of declining budgets expected to continue, the Forest's backlog of roads needing maintenance could impact hydrologic function. In response, the Roads Analysis recommends decommissioning road segments having environmental risk factors coupled with low access needs.

1.4 Purpose of and Need for Action

The basin-specific aquatic restoration strategies identify sixth-field subwatersheds that provide the cornerstone for addressing freshwater habitat restoration needs for federally listed and state sensitive resident and anadromous fish species, as well as water quality improvements. Therefore, the purpose of this proposal is to restore hydrologic function in several high priority sixth-field subwatersheds as identified in these strategies, which include: Headwaters Fifteenmile Creek, Upper Fifteenmile Creek, Upper Eightmile Creek, Upper Middle Fork Hood River, Linney Creek, Lower Salmon River, Upper Salmon River, and Still Creek (see Appendix A for a vicinity map).

Specifically, the purpose for this proposal is as follows:

- Reduce impacts to water quality, aquatic habitat, and threatened, endangered, and sensitive aquatic species caused by landslides, gullying, seasonal and permanent impassible culvert barriers, and surface erosion associated with unneeded roads.

- Meet objectives outlined in basin-specific aquatic habitat restoration strategies by reducing risks to water quality and riparian function from roads.

- Reduce road maintenance costs.

There is a need for action because:

- There are miles of unneeded roads on the Forest that have not been maintained or repaired. Many roads are no longer driveable due to brush encroachment. Routine inspection of culverts and ditches on these roads is not always possible because of lack of access, personnel, and funding. If roads are not maintained or decommissioned in the near future, then there is an increased risk for surface erosion, gullying, and landslides. Such potential risks may result in increased sediment delivery to streams and reservoirs, thereby affecting water quality and aquatic habitat.

- Forest Service budgets for road maintenance have not kept pace with what it costs to maintain all roads so they are functioning properly. With this trend of declining budgets expected to continue, the Forest's backlog of roads needing maintenance could impact hydrologic function.

1.5 Proposed Action

In response to the needs for action discussed above, the Mt. Hood National Forest proposes to decommission approximately 84 miles of unneeded roads in the following priority sixth-field subwatersheds: Headwaters Fifteenmile Creek, Upper Fifteenmile Creek, Upper Eightmile Creek, Upper Middle Fork Hood River, Linney Creek, Lower Salmon River, Upper Salmon River, and Still Creek. A list of these roads is found in Chapter 2; maps of roads proposed for decommissioning are found in Appendix A.

All of the roads in the subwatersheds were considered for potential decommissioning using the "Transportation System Planning Tool" (Appendix B). This dichotomous key was developed to guide proposals for transportation system planning on the Forest. Specifically, the "Planning Tool" provides a framework for examining administrative and public access needs for a given road. Use of the "Planning Tool" results in three potential outcomes: 1) a road needs repairs/improvements; 2) a road will be assessed in a future (within five years) planning effort; or 3) a road is proposed for potential decommissioning. All of the roads that were identified as needing repairs/improvements are listed in Appendix B and are *not* assessed in this NEPA document. All of the roads that were identified as potential decommissioning are included in this Proposed Action.

Road decommissioning would be accomplished by both active (i.e., mechanical) and passive (i.e., inactive) methods. Decommissioned roads would no longer need maintenance of any kind, since the ground occupied by decommissioned roads would return to a more natural, forested landscape. All decommissioned roads identified in this project, including "actively" and "passively" decommissioned roads, would be removed from the Forest Service Infrastructure

Database, which is the database system used for the storage and analysis of information in the transportation atlas for the agency.

Roads and road segments proposed for *active* decommissioning cross streams and require work, such as slope rehabilitation and culvert removal. Any drainage structures to be removed or treated, such as culverts, bridges, or fords, must be accomplished in such a way that restores natural drainage. This usually involves the excavation of road fill and removal of culverts for drainages and streams, thereby restoring natural contours of stream channels. For road surface drainage and intercepted shallow groundwater (springs and sheet wash), cross drains are excavated, culverts removed and flow from ditches routed to the cross drains. Cross drains are designed to be sufficiently large to capture all of the road related runoff and suitably spaced to limit the storm runoff to small discharges and slow velocities. Additionally, a barrier closure device or feature (e.g., berm, gate, or guardrail) may be constructed at the beginning of some actively decommissioned roads to deter vehicle access. In locations where a barrier closure device has been determined not to be an effective tool, the first portion (approximately 1/8 mile) of a road segment would made impassable by vehicles using mechanical methods (i.e., the road entrance would be obliterated so vehicles cannot travel beyond it).

Roads and road segments proposed for *passive* decommissioning would be decommissioned by allowing them to return to a natural condition as native vegetation grows. Most of the roads identified for passive decommissioning have not been maintained and natural vegetation has already made them inaccessible by vehicle. Also, most of these road segments are on relatively flat terrain where erosion and sedimentation are not a risk. Additionally, a barrier closure device or feature may be constructed at the beginning of some passively decommissioned roads to deter vehicle access. In locations where a barrier closure device has been determined not to be an effective tool, the first portion (approximately 1/8 mile) of a road segment would made impassable by vehicles using mechanical methods (i.e., the road entrance would be obliterated so vehicles cannot travel beyond it).

All of the roads proposed for decommissioning were assessed for conversion to a *non-motorized* trail. Several factors were considered for trail conversion: if there was sufficient mileage to make the converted trail worthwhile (i.e., whether the trail would provide a meaningful recreational experience); if the converted trail could connect to an existing non-motorized trail; and if there was a request from the public to consider a specific road for trail conversion. Based on these factors, approximately 4-5 miles of roads proposed for decommissioning would be converted into non-motorized trails, all of which would connect to existing trails. Roads converted to trails would be removed from the Forest's transportation system and returned to a hydrologically stable condition.

1.6 Decision Framework

The deciding official (i.e., Responsible Official) for this project is the Forest Supervisor for Mt. Hood National Forest. Based on the analysis in this document, and considering the public comments received, the Responsible Official will decide:

- Whether to decommission the roads as proposed, including all associated project design criteria;
- To select another alternative;

- To select and modify an alternative; or,
- To take no action at this time.

The primary factor that will influence the Forest Supervisor's decision is based on how well the purpose and need are addressed. The Decision Notice will document and describe what activities will be implemented to address the purpose and need. The decision will be consistent with the Mt. Hood Forest Plan, as amended by the Northwest Forest Plan, and will incorporate the associated project design criteria.

1.7 Management Direction

This environmental assessment is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Mt. Hood National Forest Land and Resource Management Plan (hereafter referred to as the Forest Plan) (USDA Forest Service 1990), as amended. The Forest Plan guides all natural resource management activities and establishes management standards and guidelines for the Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management. Goals, objectives, and desired future conditions of the management areas within the project area are discussed below in the description of land allocations. Additional management direction for the area is also provided in the following Forest Plan amendments:

- The Northwest Forest Plan (NWFP) - *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (USDA & USDI 1994);

- Survey & Manage – *Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Forest Service Land and Resource Management Plans within the Range of the Northern Spotted Owl* (USDA 2007);

- Invasive Plants– *Pacific Northwest Invasive Plant Program Preventing and Managing Invasive Plants Record of Decision* (USDA Forest Service 2005); and *Site-Specific Invasive Plant Treatments for Mt. Hood National Forest and Columbia Gorge Scenic Area in Oregon* (USDA Forest Service 2008).

Land Designations

The 1994 NWFP ROD land allocations amend those allocations described in the 1990 Forest Plan. There is considerable overlap among some allocations; therefore, more than one set of standards and guidelines may apply. Where the standards and guidelines of the 1990 Forest Plan are more restrictive or provide greater benefits to late-successional forest-related species than do those of the 1994 NWFP ROD, the existing standards and guidelines apply. Several land designations are found within the project area, and are discussed in further detail below.

General Riparian Area

The goal of the General Riparian Area is to achieve and maintain riparian and aquatic habitat conditions for the sustained, long-term production of fish, selected wildlife and plant species, and high quality water for the full spectrum of the Forest's riparian and aquatic areas.

Riparian Reserve

This includes areas along rivers, streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. Riparian Reserve standards and guidelines apply and are added to the standards and guidelines of other designations (USDA & USDI 1994, p. C-1).

Special Emphasis Watershed

The goal of Special Emphasis Watersheds is to maintain or improve watershed, riparian and aquatic habitat conditions and water quality for municipal uses and/or long-term fish production. Still Creek, Lower Salmon River, Upper Middle Fork Hood River, Upper Eightmile, and Headwaters Fifteenmile Creek subwatersheds have at least a portion of their area in this allocation.

Tier 1 Key Watershed

Some of the project area is located within Tier 1 Key Watershed – a component of the Aquatic Conservation Strategy (USDA & USDI 1994). These watersheds were designated as sources for high water quality; they contain at-risk anadromous fish (e.g., salmon) and bull trout. Key watersheds are highest priority for watershed restoration. The following proposed subwatersheds are Tier 1: Salmon River, Headwaters Fifteenmile Creek, Upper Fifteenmile Creek, and Upper Eightmile Creek. Watershed analyses have been completed: *Salmon River Watershed Analysis* (1995) and *Mile Creeks Watershed Analysis* (1994).

Late Successional Reserve (LSR)

These Reserves are designed to maintain a functional, interactive, and late-successional and old-growth forest ecosystem, in combination with the other land allocations and standards and guidelines of the 1994 amendment with the different LSR's serving as habitat for late-successional and old-growth related species, which includes the northern spotted owl. Portions of the Headwaters Fifteenmile Creek, Linney Creek, and Still Creek subwatersheds are in this allocation. The Headwaters Fifteenmile Creek subwatershed is included in the *Surveyors Ridge LSR Assessment* (USDA 1997); Linney Creek and Still Creek subwatersheds are included in the *North Willamette LSR Assessment* (USDA & USDI 1998).

Administratively Withdrawn – Salmon Wild and Scenic River

The Salmon River was designated a Wild and Scenic River in the Omnibus Oregon Wild and Scenic Rivers Act of 1988. Management objectives for the Salmon Wild and Scenic River System includes: maintaining the river's free-flowing characteristics and managing for the protection and/or enhancement of the outstandingly remarkable recreational, fishery, wildlife, scenic, and hydrologic values and other resource values in a balanced way. Several roads (i.e., Forest Roads 2600197, 3500120, 2600011, 2600220, and 5800242) proposed for decommissioning in the Upper Salmon River subwatershed are within portions of the designated river which are classified as wild and recreational.

Administratively Withdrawn – Management Area A11: Winter Recreation Areas

The goal for this land allocation is to provide for high quality winter recreation (and associated summer) opportunities including: downhill skiing, Nordic skiing, snowmobiling, and snowplay within a natural appearing environment. The East Leg Road (i.e., Forest Road 5000120) in the Upper Salmon River subwatershed is in this land allocation.

Matrix

This management area consists of Forest Service lands outside of designated areas (i.e., Congressionally Reserved Areas, LSRs, Adaptive Management Areas, Administratively Withdrawn Areas, and Riparian Reserves). Most timber harvest and other silvicultural activities are conducted in portions of matrix with suitable forest lands. Each of the subwatersheds proposed contain portions within matrix lands.

Other Relevant Laws and Direction

National Environmental Policy Act

This environmental assessment has been prepared in accordance with regulations established under the National Environmental Policy Act of 1969.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973, as amended, requires federal agencies to review actions authorized, funded, or carried out by them, to ensure such actions do not jeopardize the continued existence of federally listed species, or result in the destruction or adverse modification of listed critical habitat. The Forest Service consults with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) if projects potentially could affect listed species.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires federal action agencies to consult with the Secretary of Commerce (NMFS) regarding certain actions. Consultation is required for any action or proposed action authorized, funded, or undertaken by the agency that *may adversely affect* essential fish habitat (EFH) for species identified by the Federal Fishery Management Plans. For this project, two salmonid species (Chinook and coho salmon) identified under the Act occur in the project area (Hood River and Sandy River basins) (see *Fisheries* section in Chapter 3); however, this project would not adversely affect EFH.

National Historic Preservation Act of 1966, Executive Order 11593, 36 CFR 800.9 (Protection of Historic Properties)

Section 106 requires documentation of a determination of whether each undertaking would affect historic properties. The Mt. Hood National Forest operates under a programmatic agreement between the Oregon State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation for consultation on project determination.

Wild and Scenic Rivers Act

Section 7(a) of the 1986 Wild and Scenic Rivers Act prohibits agencies of the United States from assisting in any water resources project that "…would have a direct and adverse effect on the values for which such a river was established…" Section 7 provides authority to the Secretary of Agriculture to evaluate and make a determination on water resources projects that affect wild and scenic rivers. The authority for that determination for projects on National Forest System lands is delegated to the Forest Supervisor (Forest Service Manual 2350). See Appendix C for the "Section 7 Determination Report" for this project.

Clean Water Act

The Clean Water Act of 1977 (CWA) and subsequent amendments established the basic structure of regulating discharges of pollutants into waters of the United States. The Environmental Protection Agency (EPA) has the authority to implement pollution control programs and to set water quality standards for all contaminants in surface waters. The EPA delegated implementation of the CWA to the States; the State of Oregon recognizes the Forest Service as the Designated Management Agency for meeting CWA requirements on National Forest System lands.

1.8 Public Involvement

In March 2008, following the development of the proposed action, "scoping" letters were mailed to a large number of interested individuals and organizations. A legal advertisement notifying the public about the proposed action was published in *The Oregonian* newspaper on March 24, 2008. Also, this project was listed in the PALS database, which is the electronic form of the Schedule of Proposed Actions and is posted quarterly on the Forest website. On January 25, 2008 members of the interdisciplinary team met with representatives of The Confederated Tribes of Warm Springs at Bear Springs, Oregon to discuss this project. Comments on the proposal were received from over 50 respondents. All comments received were considered and used to amplify the preliminary issues and alternatives.

In October 2008, the preliminary environmental assessment was made available to the public for a 30-day comment period. Those who participated in the initial scoping process were notified via mail and/or email about the availability of the preliminary EA, which was posted on the Forest's website. Legal notice of the availability of the preliminary EA was published in *The Oregonian* (the newspaper of record) on October 17, 2008. By the end of the comment period, a total of 26 individuals and organizations had commented on the preliminary EA. The IDT and the Responsible Official considered all comments received (as per 36 CFR Part 215) and, where appropriate, enhanced the analysis in response to those comments. Appendix D provides specific "Responses to Comments"; and copies of the comments received are available in the project files.

1.9 Issues

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of implementing the proposed action. Issues may be significant or non-significant. Non-significant issues include those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or

4) conjectural and not supported by scientific or factual evidence. Significant issues are directly or indirectly caused by implementing the proposed action. Significant issues generally suggest a problem with the proposed action such that alternative actions need to be developed to solve that problem. Identifying the significant (or key) issues provides focus for the analysis. Significant issues are not only used to develop alternatives to the proposed action, but are also used to develop mitigation measures and track environmental effects.

Public comments were reviewed by the Interdisciplinary Team to identify public concerns and issues relative to the proposed action. The Responsible Official reviewed the public comments received during scoping to determine the significant issues to be addressed in this analysis.

Significant Issues

1) Potential effects to accessing rock climbing at Bulo Point

Decommissioning Forest Road 2730240 would close direct access to Bulo Point, a popular rock climbing site in the Headwaters Fifteenmile Creek subwatershed.

2) Potential effects to snowmobile routes

Decommissioning Forest Road 2730240 in the Headwaters Fifteenmile Creek subwatershed would restrict the use of established snowmobile trails, including a loop trail.

3) Potential effects to Middle Fork Irrigation District's management of the Clear Creek Reservoir in the Upper Middle Fork Hood River

Decommissioning Forest Road 2840640 would restrict access to the rock pit of the Middle Fork Irrigation District to do future watershed enhancement projects.

4) Potential effects to dog sledding and skijoering

Decommissioning Forest Road 2632130 in the Still Creek subwatershed would restrict the use of a critical turn around point for sled dog teams, particularly used for training dog teams to turn around. Also, decommissioning roads in Linney Creek would increase the concentration of mixed uses, which may increase conflict between sled dogs/skijoers and hunting and snowmobiles.

5) Potential access to private land

Decommissioning Forest Road 4460120 in the Upper Eightmile Creek subwatershed would restrict access between private land adjacent to the Forest boundary and a private in-holding.

2.0. Alternatives, including the Proposed Action

2.1 Introduction

This chapter includes a description of the range of reasonable alternatives developed to respond to the need for actions described in Chapter 1. First, this chapter describes the alternatives considered but eliminated from further analysis. Next, two action alternatives and the alternative of no action are described in detail and are presented in comparative form, so that the differences among them are clear to both the decision-maker and the public. Also described in this chapter are the design criteria that would be implemented to minimize or prevent adverse effects of road decommissioning.

2.2 Alternatives Considered But Eliminated From Detailed Study

When the scoping process started for this proposal, an alternative proposal was considered. This alternative did not adequately meet the purpose and need for action; and therefore, was eliminated from further analysis in this EA. A brief description of the alternative is discussed below, along with the reasons for eliminating it from detailed study.

Decommissioning only the northern portion (approximately the first 1.1 miles) of Forest Road 2730240 in the Headwaters Fifteenmile Creek subwatershed.

This alternative would decommission Forest Road 2730240 from the north to the south, stopping at Bulo Point. The remaining portion of this road would then stay open in order to access Bulo Point (for rock climbing) from the south. This alternative was proposed as the converse to Alternative 3 (which is discussed in the section below), and was in response to exploring options for climbers to continue to access Bulo Point. This alternative was eliminated from detailed study for the following reasons:

- Members from the local climbing community expressed concern that this would be a longer drive to access the climbing rock. Because the climbing community felt like Alternative 3 addressed their concerns more accurately, there was no longer a need to consider this alternative.

- The Interdisciplinary Team felt as though the repairs to the southern portion of the road, in order to keep it open for access to Bulo Point, would be more costly than those to repair the northern portion of road, as proposed in Alternative 3. The higher costs correlate to the greater amount of water (mainly coming from springs) on the southern portion of the road. Because the IDT felt as though Alternative 3 better addresses hydrologic impacts and the associated costs with repairs, there was no longer a need to fully analyze this alternative in detail.

2.3 Alternatives Considered in Detail

Alternative 1 – No Action

Selecting the No Action Alternative would mean no road decommissioning activities would be completed. The roads would remain as they currently are on the landscape. The roads would continue to receive limited levels of maintenance, or no maintenance.

Work on other projects in the priority watersheds, with signed decisions, would be expected to continue. Implementing the No Action Alternative for this project would not preclude other reasonably foreseeable actions in the watersheds.

Alternative 2 – Proposed Action

Alternative 2 is the Proposed Action, as described in Chapter 1. Implementing this alternative would include decommissioning approximately 84 miles of road. The roads proposed for decommissioning are listed below; maps of each subwatershed, highlighting the roads proposed for decommissioning, are found in Appendix A.

	Road Number	Number of miles
Upper Eightmile Watershed	4430120	0.6
	4440140	1.1
	4440161	0.7
	4460141	0.5
	4460140	2.4
	4460000	2.3
	4460120	1.5
	4430120	0.6
	4440140	1.1
	Total: 9.1 miles	

	Road Number	Number of miles
Upper Middle Fork Watershed	2840620	1.4
	2840621	0.8
	2840622	0.4
	2840630	3.4
	2840640	0.7
	2840650	1.5
	2840660	0.8
	2840000 (from Kinnikinnick)	5.7
	2840671	0.6
	Total: 15.3 miles	

	Road Number	Number of miles
Headwaters Fifteenmile Watershed	2730240	2.4
	4421121	0.2
	4421120	0.7
	4450150	1.4
	4450160	1.0
	4450170	0.1
	4450120	1.1
	4450121	0.4
	4450122	0.1
	4450130	0.2
	4450140	0.8
	4450200	0.1
	4421170	0.4
	4421000	3.6
	4421016	0.8
	2730160	2.7
	2730161	0.6
	2730180	1.3
	Total: 17.9 miles	

	Road Number	Number of miles
Lower Salmon Watershed	2618000	0.5
	2618000	1.1 (convert to trail)
	2618032	0.2
	Total: 1.8 miles	

	Road Number	Number of miles
Upper Fifteenmile Watershed	2730132	1.2
	2730130	1.7
	4421190	0.4
	Total: 3.3 miles	

Linney Creek Watershed	Road Number	Number of miles
	4610220	1.2
	4610047	0.2
	4610230	0.3
	4610231	0.3
	4610225	0.6
	4610050	0.3
	4610051	0.3
	5850260	0.2
	5850012	1.1
	5850000	3.0
	5850250	1.0
	5850240	0.6
	5850220	1.1
	5855000	1.2
	5855240	0.5
	5855230	1.3
	5800290	0.2
	5855251	0.7
	5855250	0.8
	5800270	0.8
	5880000	1.5
	5880222	1.1
	5880221	0.6
	5880223	0.7
	5880224	0.3
	Total: 19.9 miles	

Upper Salmon Watershed	Road Number	Number of miles
	5000120	1.3
	5000123	0.1
	2600226	0.9 (convert to trail)
	2600197	0.2 (convert to trail)
	3500120	0.4
	2656035	0.1
	2656041	0.1
	2656043	0.2
	2656030	0.1
	2656028	0.2
	2656072	0.1
	2656074	0.1
	2600011	0.5
	2656130	1.0
	2656131	0.2
	2600220	0.5
	2656044	0.5
	2656047	0.3
	2656155	0.2
	2656053	0.2
	2656099	0.7
	2656064	0.5
	2656309	1.1
	2656124	1.2
	2656125	0.3
	2656126	0.5
	2656140	0.2
	2656256	0.1
	2656257	0.1
	5800242	1.1
	Total: 13.0 miles	

Still Creek Watershed	Road Number	Number of miles
	2612310	0.5
	2612320	0.3
	2612021	0.1
	2632160	0.7 (convert to trail)
	2632150	0.5
	2632131	0.4
	2632130	0.2
	2612022	0.3
	2612023	0.1
	2612145	0.4
	2612146	0.2
	Total: 3.7 miles	

Active decommissioning methods would include ripping pavement, constructing crossdrains, removing fill at stream crossings, constructing boulder weirs in perennial stream channels, removing bridges and culverts, seeding or mulching disturbed areas, and planting at stream crossings. These methods are discussed in more detail below:

Pavement Ripping: The purpose of pavement ripping is to: 1) to break-up of the impervious surface by physical disturbance and root action, and 2) to revegetate with native species, contributing litter, and seed to improve the site for vegetation establishment. The asphalt layer on Forest Roads is 4-6” in depth, on average. The asphalt would be broken up with an excavator and spread out evenly over the road surface, being careful to keep the broken asphalt on the road surface and out of ditches, waterbars, and streams. At 15’ intervals, a soil crater would be created to speed the establishment of plants. A hiking tread would be left intact on the edge of the roadbed.

For paved and gravel roads, cracking by various means is accomplished as heavy equipment operates. Removal of pavement pieces about 3 'x 3' on wheel treads spaced about every 15' and replacement with nearby vegetation is planned. Areas would be de-compacted down to mineral soil and existing vegetation would be planted when available. Pavement does not need to be removed to stop its function as an impervious surface to runoff. In many areas where paved roads have not been maintained in the watersheds, numerous tree species have become reestablished naturally. Inboard ditchlines would not be filled with broken asphalt.

Crossdrains: Crossdrains would be constructed as appropriate with a maximum distance of 200 feet between crossdrains. Suitable construction equipment includes, excavators, backhoes, and track mounted loaders.

Decommissioned Stream Crossing: Removal of the fill at stream crossings is meant to restore the stream channel and banks to original pre-road (natural) contours as much as possible. The removed material would be carefully placed at cutslopes or on the road surface beyond the natural channel slope at a less than 2 to 1 slope angle. Stream channel width would be at least 1.1x bankfull as measured above the stream crossing. Stream banks would constructed at a maximum of 1.5 to 1 slope angle (66% slope). All fill materials would be tamped by the bucket of the excavator to reduce settling. Woody debris (which must be removed to access the area) would be saved and scattered on the disturbed areas parallel to the slope in order to serve as: contour barriers to surface soil movement, as a source of large woody debris to help reestablish vegetation, and as a means to reduce fuels hazards. The debris would be one layer thick and spaced to allow foot travel along roads.

Cross Vane or Upstream U: Boulder weirs (upstream U’s) would be constructed in most perennial stream channels. The purpose of the weirs is to decrease stream bed and bank erosion by keeping the flow of the stream in the center of the channel.

Bridge Deck Removal: Log stringer bridges on log crib abutments with wooden plank deck overtopped with asphalt pavement would be removed as part of the decommissioning associated with the proposed action. Prior to removal of the bridge, a sheet plastic cover or similar covering would be placed underneath the bridge to prevent falling debris from entering the water and streambed. Turbidity monitoring would occur before, during, and after the project at locations above and below the project. An increase of 10 NTU's (Nephlometric Turbidity Units) below the project area would cause work to stop and the operator would need to take remedial measures to clean the stream and prevent entry of soils into the stream. Also, in the event that chemically treated wood materials are found within the bridge structure, then those materials would be removed and disposed of in accordance with state standards.

The pavement would be removed by a loader and bucket or similar equipment and end hauled to a local disposal site outside of the Riparian Reserve. The decking would be removed to a disposal site for later burning during the rainy season. The log stringers would be cut into two pieces and yarded from the each end of the bridge. The log cribs would be removed and the accompanying fills pulled back and end hauled to a disposal location where the spoils would be spread and revegetated. The exposed stream banks would be mulched with weed-free ryegrass or wheat straw, seeded with a native grass seed mix, and replanted with a diversity of woody species present in the immediate vicinity.

Erosion Control with Seed and Mulch: Following earthwork, the disturbed areas would be seeded with a native seed mix or annual ryegrass and mulched with a weed-free annual ryegrass or wheat straw. Other materials may be used for mulching if they provide equivalent or better stabilization from erosion and protection from introducing non-native species. Attempts would be made to seed disturbed areas during conditions favorable for germination. When possible, plant materials would be saved and stockpiled from the areas of excavation and replanted on the disturbed areas. Native plants may also be transplanted to openings created in the wheel tread portion of the pavement.

All design criteria listed Section 2.4 would be included in the implementation of Alternative 2.

Alternative 3

Alternative 3 would decommission approximately 81 miles of road. The roads proposed for decommissioning remain the same as Alternative 2 – Proposed Action, ***except*** the following:

- <u>Forest Road 2730240</u> (Headwaters Fifteenmile Creek Subwatershed): This road would remain open from the north to Bulo Point (Key Issue #1). A place for vehicles to turn around would be constructed just before Bulo Point in order to provide access to the climbing rock. Parking space would also be provided. This northern segment of the road would be improved as needed to mitigate current adverse impacts to hydrologic function. The remaining portion of this road (from Bulo Point to the south) would be converted to trail (for summer and winter use) and be repaired as needed (Key Issue #2).

- <u>Forest Road 2840640</u> (Upper Middle Fork Hood River Subwatershed): This road would continue to have administrative access from the gate to the rock pit, and maintained as needed (Key Issue #3). However, beyond the rock pit, this road would be decommissioned using passive methods.

- <u>Forest Road 2632130</u> (Still Creek Subwatershed): This road would remain open, and maintained as needed to provide access for sled dog teams (Key Issue #4).

- <u>Forest Road 4460120</u> (Upper Eightmile Creek Subwatershed): The first mile of this road would remain as it currently is on the landscape (i.e., closed by a guardrail) in order to maintain access to private land (Key Issue #5). The remaining one half mile would be decommissioned using passive methods.

Active decommissioning methods would include ripping pavement, constructing crossdrains, removing fill at stream crossings, constructing boulder weirs in perennial stream channels, removing bridges and culverts, seeding or mulching disturbed areas, and planting at stream crossings (for more information on each of these methods see Alternative 2 above).

All design criteria listed in Section 2.4 would be included in the implementation of Alternative 3.

2.4 Project Design Criteria

The following design criteria and standard management practices and requirements for the protection of resources are an integral part of the action alternatives, and are considered in the effects analysis in Chapter 3.

Botany Design Features

B-1: In order to prevent the spread of invasive plants, all equipment would be cleaned of dirt and weeds before entering National Forest System lands. This practice would not apply to service vehicles traveling frequently in and out of the project area that would remain on the roadway.

B-2: Existing roadways would be used to minimize the impacts to riparian vegetation and function. Native vegetation in and around project activity would be retained to the maximum extent possible consistent with project objectives.

B-3: Soil disturbance that promotes invasive plant germination and establishment would be minimized to the extent practical (consistent with project objectives).

B-4: The contractor would be educated in simple techniques to avoid spreading weeds (e.g., provide the contractor with the flyer, *Simple Things You Can Do to Help Stop the Spread of Weeds*).

B-5: Following earthwork, especially near stream banks, the disturbed area would be seeded with a native seed mix if available and mulched with a weed-free straw, at approximately 4000 pounds per acres or so that there is completed coverage of the disturbed and the mulch is 4 inches deep. Attempts would be made to seed disturbed areas during conditions favorable for germination. Other materials may be used for mulching if they provide equivalent or better stabilization from erosion and protection from introducing non-native species.

B-6: If a road is part of a proposed noxious weed treatment site or provides access to a site (see the Table 2.1 below), then complete treatment before making the road unavailable. If the road and the land it accesses are not listed in the Invasive Plant EIS, then check with the district noxious weed coordinator and consider a review or site visit to be sure there are no weed sites that would need to be treated. If a weed site is found that needs treatment, then complete treatment of the site prior to closing the road. Prior to initiating any decommissioning activities, a treated site should be monitored by a botanist in order to determine the effectiveness of treatment.

Table 2.1. Roads proposed for decommissioning that are also proposed for invasive plant treatment.

District	Comment	Road
Barlow	Road shoulder is treatment site	2730-160
Barlow	Road shoulder is treatment site	4421-000
Barlow	Road shoulder is treatment site	4440-161
Hood River	Road shoulder is treatment site and access to other site	2840-000
Hood River	Road shoulder is treatment site	2840-650
Hood River	Access to a site	2840-640

Fisheries Design Features

F-1: An experienced fisheries biologist, hydrologist, and/or technician would participate in the design and implementation of the project.

F-2: Slide and waste material would be disposed of in stable, non-floodplain sites. However, disposal of slide and waste material within existing road prism or adjacent hillslopes would be acceptable if restoring natural or near-natural contours. For road removal projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the greatest degree possible.

F-3: Disturbance of existing vegetation in ditches and at stream crossings would be minimized to the extent necessary to restore the hydrologic function of the subject road.

F-4: Soil disturbance and displacement caused by project activities would be minimized, but where sediment risks warrant, soil movement off-site would be prevented through the use of filter materials (such as weed-free straw bales or silt fencing) if vegetation strips were not available.

F-5: Project activities would be implemented during dry-field conditions (also see WQ-1).

F-6: The Oregon Department of Fish and Wildlife (ODFW) Guidelines for Timing of In-Water Work would be followed (except where the potential for greater damage to water quality and fish habitat exists). Exceptions to ODFW guidelines for timing of in-water work would be requested and granted from appropriate regulatory agencies.

F-7: Power equipment would be refueled at least 150 feet from water bodies to prevent direct delivery of contaminants into a water body. If local site conditions do not allow for a 150-foot setback, then refueling would be as far away as possible from the water body. For all immobile equipment, absorbent pads would be used (also see WQ-15).

F-8: An approved Spill Prevention Control and Containment Plan (SPCCP) would be created, which describes measures to prevent or reduce impacts from potential spills. The SPCCP would include a description of the hazardous materials that would be used; and a spill containment kit would be located on-site. Refer to WQ-18 for specific criteria when an SPCCP would be required.

F-9: Hazard trees within riparian areas needing to be felled for safety purposes would be directionally felled, if possible, towards the stream.

F-10: For culvert removal, natural drainage patterns would be restored and when possible promote passage of all fish species and life stages present in the area. Channel incision risk would be evaluated and in-channel grade control structures would be constructed when necessary.

F-11: Drainage features should be spaced to hydrologically disconnect road surface runoff from stream channels.

F-12: Forest Road 2840640 in the Upper Middle Fork Hood River would not be decommissioned until after watershed restoration activities (in partnership with the Middle Fork Irrigation District) have been completed.

F-13: When removing a culvert from a first or second order, non-fishing bearing stream, project specialists should determine if culvert removal should follow the conservation measures under activity #5 in the programmatic biological and conference (Opinion) by the National Marine Fisheries Service (April 28, 2007) and by U.S. Fish and Wildlife Service (June 14, 2007). Culvert removal on fish bearing streams should adhere to the conservation measures activity #5 in the programmatic biological and conference (Opinion) by the National Marine Fisheries Service (April 28, 2007) and by U.S. Fish and Wildlife Service (June 14, 2007).

F-14: If other aquatic restoration activities are used as complementary actions, follow the associated design criteria and conservation measures.

Heritage Design Features

H-1: In the event that archaeological properties are located during implementation, all work in the vicinity of the find would cease and a District or Forest archaeologist would be contacted. Any other protection measures would be developed in consultation with the Oregon State Historic Preservation Officer (SHPO), appropriate Tribes, and, if necessary, the Advisory Council on Historic Preservation.

H-2: The boundaries of the heritage sites near Forest Roads 2656035 and 2730160 would be flagged as a boundary for the exclusion of heavy machinery and ground disturbance. Above-ground barricades could be utilized for no effect on the sites.

H-3: Active decommissioning should be limited to the first 100 feet of Forest Road 4450200.

Recreation Design Features

R-1: Trailhead access and parking would be maintained or closure would be minimized during implementation. If any existing trailheads become inaccessible by decommissioning a road (e.g. Pinnacle Ridge, Elk Cove, Salmon Butte, and Bulo Point), then the affected trailheads and trails would be relocated prior to initiating any decommissioning activities. The locations of any changes that may be necessary are not analyzed in detail in this document, and may require further survey, analysis, and documentation.

R-2: All roads converted to trails (such as Forest Roads 2632160, 2618000, 2600197, and 2600226) should meet Forest Service standards for trail construction, as contained in the Manual and Handbook. A qualified trails engineer should perform trail layout and design. Drainage structures, fill and cut slopes, and future brushing needs should be within trail budgets to maintain.

R-3: All trails created from decommissioned roads should meet the Forest Wide Standards and Guidelines on page Four-115 and 116 for visual quality within five to ten years of conversion activities. Any relocated trails not on road beds should meet standards within one year of construction.

R-4: Any road converted to a snowmobile trail or route, such as Forest Roads 4550160 and 2730240 in the Headwaters Fifteenmile Creek Subwatershed, needs to have minimum width of 16 feet to provide passage for a groomer. Trails would need to be brushed regularly to prevent encroachment. Also, roads converted to a snowmobile trail or route, should provide for safe passage of snowmobiles and groomers. This requires that closure devices have less height than the prevailing snow depth when use begins. Gates that can hook skis would not be acceptable. Where a closure barrier is necessary, berms are preferred. However, berms must not present a hazard to snowmobiles with abrupt drop-offs not visible when approaching on a machine.

R-5: Forest Road 2840 (Upper Middle Fork Subwatershed) is identified as portion of a potential future bike/horse trail in Forest Plan Appendix C, Access and Travel Management (Laurance Lake High Loop Trail # 629). This road could be left in condition that could be turned in to a trail if this project is funded and executed in the future.

Water Quality Design Features

WQ-1: Road decommissioning activities would be suspended if there is more than 2 inches of rainfall in a 24 hour period in the project area.

WQ-2: Project operations would be suspended if soil moisture is recharged and streamflows rise above baseflow levels.

WQ-3: Removal of the fill at stream crossings would attempt to restore the stream channel and banks to original pre-road (natural) contours as much as possible.

WQ-4: The removed material would be carefully placed at cutslopes or on the road surface beyond the natural channel slope at a less than 2 to 1 slope angle.

WQ-5: All removed fill materials at stream crossings would be tamped by the bucket of the excavator to reduce settling.

WQ-6: Stream channel width would be at least 1.1x bankfull as measured above the stream crossing. Stream banks would be constructed at a maximum of 2 to 1 slope angle (50% slope).

WQ-7: 50-75% of the road surface where compacted would be de-compacted through the sub-grade, and native vegetation would be planted when available.

WQ-8: All perennial streams would be evaluated to determine if "Upstream U's" are necessary to prevent streambed and bank erosion. Structures would be installed as outlined in the following table:

Table 2.2. Pool to Pool Spacing

Wetted Stream Width (feet)	**Minimum Boulder Size Needed (inches)**	**Stream Gradient (percent)**			
		0-2%	**2-6%**	**6-15%**	**15-30%**
0 to 5	18	42 feet	15 feet	8 feet	4 feet
5 to 10	24	63 feet	21 feet	12 feet	6 feet
10 to 15	24	105 feet	36 feet	20 feet	10 feet
15 to 25	30	167 feet	57 feet	32 feet	16 feet

WQ-9: The ends of structures would be keyed into the stream bank for at least ¼ of the diameter of the boulder to minimize the stream cutting into the stream bank at high flows.

WQ-10: Activities associated with culvert or bridge removal in streams with active streamflow would be suspended if there is an increase of 10 NTU's (Nephlometric Turbidity Units) below the project area. Also, activities could be suspended if turbidity criteria are exceeded as determined by appropriate Forest Service personnel.

WQ-11: Removal-Fill Permits would be obtained for project activities when appropriate.

WQ-12: A site-specific water quality control plan would be submitted and approved for each stream diversion prior to the start of excavation. Live streams would be diverted during excavation to prevent mobilization of fill material.

WQ-13: Where roads are actively decommissioned drainage structures would be installed at a maximum of every 200' or closer dependent upon road grade and associated geology.

WQ-14: All vehicles and machinery would be free of petroleum leaks. Any leaks that occur would be immediately repaired and the appropriate personnel would be notified.

WQ-15: Absorbent pads would be required under all stationary equipment and fuel storage containers during all servicing and refueling operations (also see F-6).

WQ-16: All trucks used for refueling should carry a hazardous material recovery kit (also see F-7). Any contaminated soil, vegetation or debris must be removed from National Forest System lands and disposed of in accordance with state laws.

WQ-17: All petroleum products being transported or stored would be in approved containers meeting Occupational Safety and Health Administration standards and Oregon Department of Transportation.

WQ-18: All vehicles hauling more than 300 gallons of fuel would have an approved communication system with which to report accidental spills. If any fuel or fluid storage container exceeds a capacity of 660 gallons, the contractor would prepare a spill prevention control countermeasures plan. Such plan would meet applicable Environmental Protection Agency requirements (40 CFR 112) including certification by a registered professional engineer.

WQ-19: The contractor would be liable for cleanup of any hazardous material or fuel spill occurring as a result of his/her work on this contract.

WQ-20: The contractor would, on a daily basis, remove all trash and refuse from the project work area.

WQ-21: In order to preclude erosion into or contamination of the stream or floodplain, staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) would be located beyond the 100-year floodplain.

Wildlife Design Features

W-1: Woody debris, which must be removed to access the area, would be saved and scattered on the disturbed areas. During placement they would be laid parallel to the slope to serve as contour barriers to surface soil movement. The material would serve as a source of large woody debris to help reestablish vegetation, and the scattering of material would act as a means to reduce fuel hazards.

W-2: Hazard trees outside of the riparian areas that pose a safety risk would be directionally felled, where feasible, away from the road prism and into the surrounding forestland.

W-3: In the event that any new Northern spotted owl activity center(s) is/are located, then seasonal operating restrictions would be implemented for the road affected.

W-4: If a wooden bridge is identified to be removed, then the bridge would first be assessed by a wildlife biologist to see if bats are using it for habitat. If so, then additional bat roosting habitat (e.g., bat boxes or snags) would be provided in the vicinity of the bridge.

2.5 Comparison of Alternatives

The following table displays the three alternatives. Alternatives are compared in such a way that the differences among them in terms of road decommissioning are highlighted for the public and the Responsible Official.

Table 2.3. Comparison of alternatives. (Mileage in **bold** in Alternative 3 denotes a change from Alternative 2.)

Subwatershed	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3
Still Creek	There would be no changes to the transportation system.	• 3.0 miles would be decommissioned • 0.7 miles would be converted to trail	• **2.8** miles would be decommissioned • 0.7 miles would be converted to trail
Lower Salmon	There would be no changes to the transportation system.	• 0.7 miles would be decommissioned • 1.1 miles would be converted to trail	• 0.7 miles would be decommissioned • 1.1 miles would be converted to trail
Upper Salmon	There would be no changes to the transportation system.	• 11.9 miles would be decommissioned • 1.1 miles would be converted to trail	• 11.9 miles would be decommissioned • 1.1 miles would be converted to trail
Linney Creek	There would be no changes to the transportation system.	• 19.9 miles would be decommissioned	• 19.6 miles would be decommissioned
Upper Eightmile	There would be no changes to the transportation system.	• 9.1 miles would be decommissioned	• **8.1** miles would be decommissioned
Headwaters Fifteenmile	There would be no changes to the transportation system.	• 17.8 miles would be decommissioned	• **16.8** miles would be decommissioned
Upper Fifteenmile	There would be no changes to the transportation system.	• 3.3 miles would be decommissioned	• 3.3 miles would be decommissioned
Upper Middle Fork	There would be no changes to the transportation system.	• 15.3 miles would be decommissioned	• **14.9** miles would be decommissioned
Total miles of decommissioning	**0 miles**	**84.0 miles**	**81.0 miles**

3.0. Affected Environment and Environmental Consequences

3.1 Introduction

This chapter includes a summary of the physical, biological, social, and economic environments of the affected project area (the baseline or existing condition) and the expected effects or changes to those environments, if any of the alternatives were to be implemented. This chapter provides the scientific and analytical basis for the comparison of alternatives, presented on the previous page. Specialist Reports (available in the project files, Mt. Hood Supervisor's Office) are incorporated by reference, and all specialists have contributed directly to the preparation of this final document.

The chapter is arranged by resource, with the affected environment discussion presented first, followed by the estimated project effects (direct and indirect), and then estimated cumulative effects. Cumulative effects are those effects on the environment resulting from the incremental effect of the proposed road decommissioning activities when added to the effects of other past projects (that still have residual or on-going effects); the estimated effects of other current projects; and the effects of reasonably foreseeable future activities (federal or non-federal) (40 CFR Parts 1500-1508). The analysis was guided by the June 24, 2005 memo Guidance on the Consideration of Past Actions in Cumulative Effects Analysis, Executive Office of the President, Council on Environmental Quality.

3.2 Hydrology

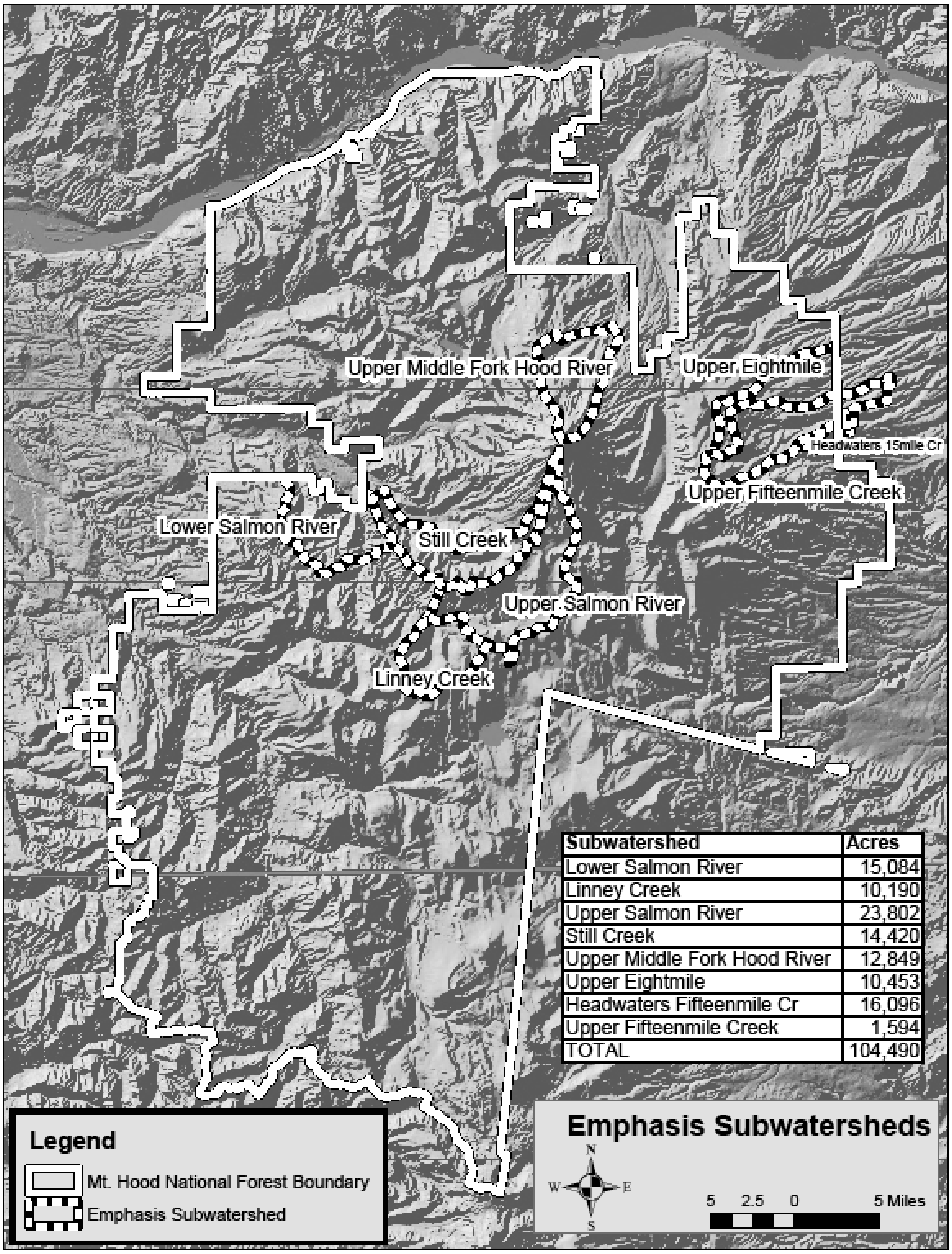
In this section, the effects to water resources are addressed by three key elements:

1) Flow regime;
2) Soils and geology; and,
3) Sediment yield.

Affected Environment – General

The road network analyzed is on National Forest System lands within the Mt. Hood National Forest in eight emphasis (or priority) subwatersheds (see Figure 3.1), which are Still Creek, Upper Salmon River, Lower Salmon River, Linney Creek, Upper Middle Fork Hood River, Upper Eightmile Creek, Headwaters Fifteenmile Creek, and the Upper Fifteenmile Creek. The eight subwatersheds cover approximately 104,490 acres of National Forest System lands. The subwatersheds were selected by restoration priority associated with Watershed Action Plans for the associated stream basins (Sandy River, Hood River and Miles Creeks).

Figure 3.1. The eight emphasis subwatersheds.



<u>Climate</u>

Climate is significant in determining the patterns of river and stream flow, moisture content of the soil, and plants that inhabit an area. Climatic conditions vary significantly between emphasis subwatersheds.

Table 3.1. Project area climate data (PRISM Data).

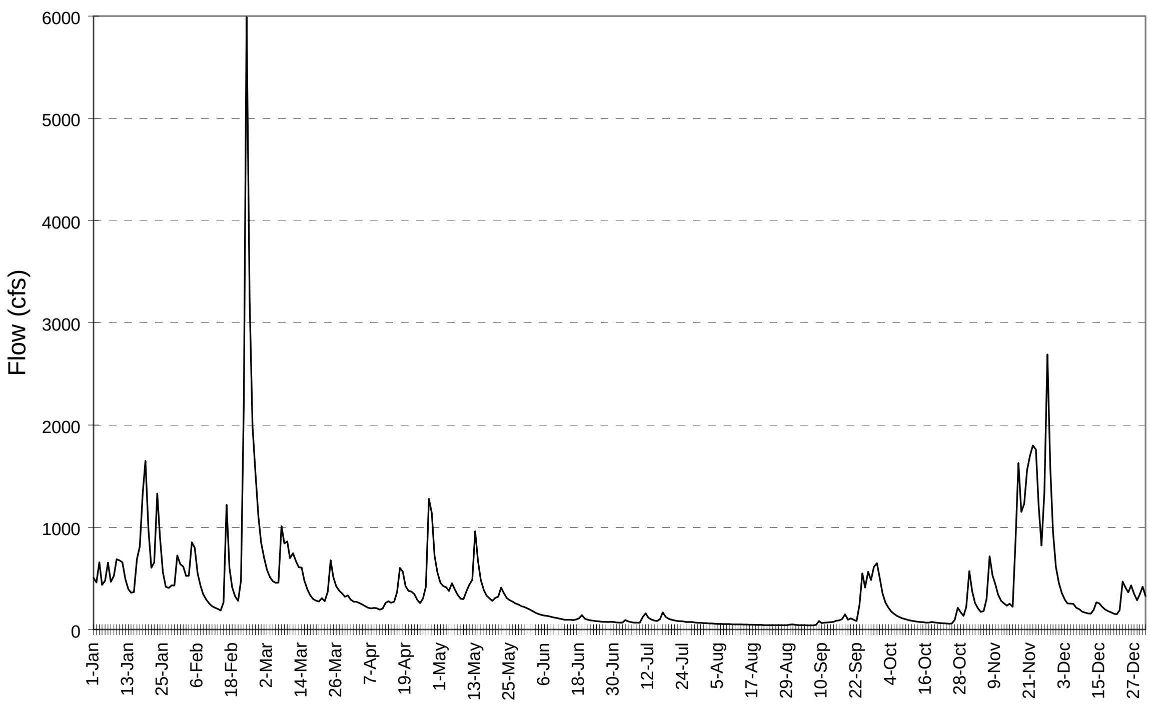
Basin area	Mean precipitation (inches)	Number of wet days
Salmon River	77.56	141.7
Upper West Fork Hood River	118.79	121.9
Miles Creek	17.39	121.9

Average annual precipitation ranges from 17-119 inches within the project area (Table 3.1). July and August are the driest months; November, December, and January are the wettest. Precipitation at the lower elevations is primarily in the form of rain. At higher elevations (4000 to 6000 feet), 40 to 60% of the annual precipitation may be in the form of snow. Snowpack depth and period of accumulation vary with elevation. Within the Sandy River Basin at 3800 feet, 28 inches is the average maximum snowpack (as measured in snow water equivalent); at 5400 feet, 67 inches is the average maximum snowpack. Snowfall is rare below 2000 feet.

Streamflow

Streamflows within the Lower Sandy River, Still Creek, Eightmile and Fifteenmile Creeks are characteristic of transient snow zone systems with low flows in the late summer (August and September) and high flows generated by, typically, a dozen distinct storm events during October through April (Aumen, Grizzard, and Hawkins 1989). Flows from the Bull Run River gage, plotted in Figure 3.2, demonstrate August and September's low flow period, and the high flows associated with October through April's storm events. The peak flow event was in February and was generated by a rain-on-snow event. 1986 was selected as a representative year because of the typical low flow period and the rain-on-snow event in February.

Figure 3.2. Stream flow (cfs) Bull Run River upstream of reservoirs (USGS Station 14138850, Calendar Year 1986).



The Upper Salmon River, Linney Creek and Upper Middle Fork Hood River would be expected to exhibit a snowmelt dominated hydrograph. Figure 3.3 details the mean daily values for the Salmon River stream gage at 3445 feet. Figure 3.3 clearly details the influence of the melting snowpack (starting in early April and peaking in late May) on the annual hydrograph. Baseflows at this site generally occur from mid July through mid November.

Figure 3.3. Daily mean streamflows Salmon River at 3445 feet.

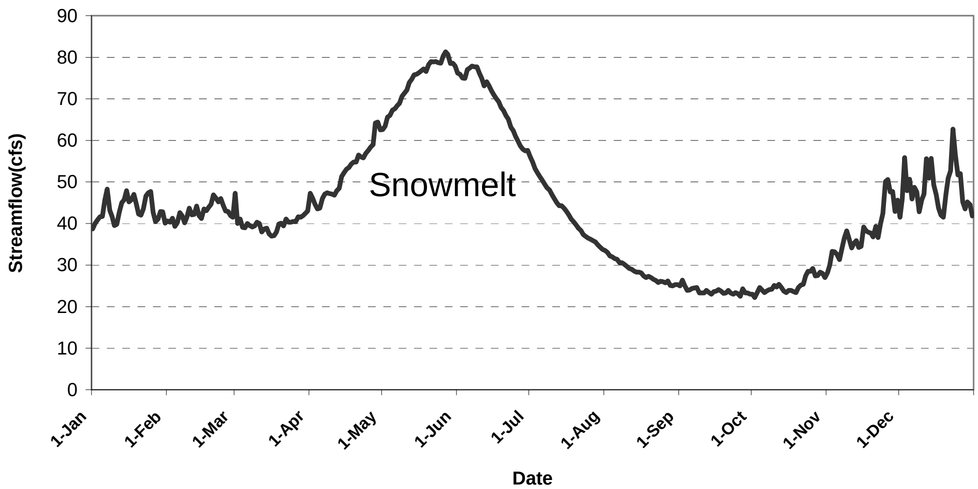
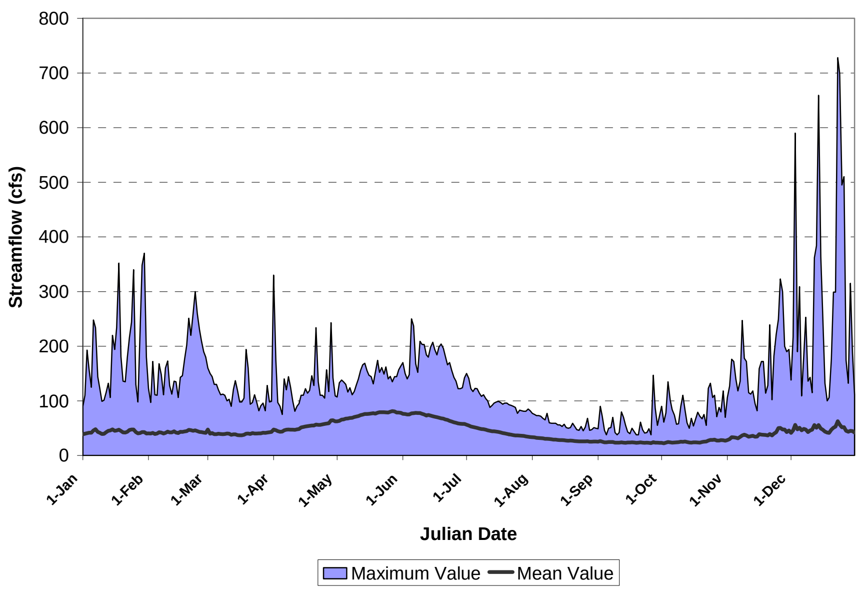


Figure 3.4 details the maximum daily streamflows for the 67 years of record for the Salmon River gage at 3445 feet. This figure details that the maximum streamflows occur from late November to early March. This would indicate that peak streamflows are associated with runoff from rapid snowmelt and rainfall during rain on snow events.

Figure 3.4. Peak streamflows Salmon River at 3445 feet.



Affected Environment – Flow Regime

The relatively impermeable surfaces of roads cause surface runoff of rain and snowmelt water to bypasses longer, slower subsurface flow routes in soils. Where roads are in-sloped to a ditch, as most of the roads in this project are, the ditch extends the drainage network, collects surface water from the road surface and subsurface water intercepted by road cuts and transports this water quickly to streams (Bull Run Watershed Analysis 1997, p. 4-160). This process increases flow routing efficiency and may result in increased magnitude of peak stream flows.

For this analysis, peak flows are related to the increase in the channel lengths caused by road ditches connected to streams. Based on recent research on two basins in the Western Cascades of Oregon, 57% of the road length is connected to the stream network by surface flowpaths including roadside ditches and gullies below road drainage culverts (Wemple 1996). It is assumed that all road ditches and culverts are properly maintained. Where roads are decommissioned, the length of expanded drainage network from roads decreases. Decommissioned roads eliminate the road ditch to the first relief culvert upslope at drainage crossings, and intercepted subsurface flows from road cuts are dispersed and allowed to infiltrate. When the ditch relief culverts are removed and an earth bottomed cross drain remains with graded sideslopes, intercepted subsurface water from cut slopes and collected by ditches may infiltrate to reduce the diverted flows.

The increase in channel length due to the ditch length as just described is expressed as a percent of the stream drainage network. This process was analyzed for the portion of the subwatershed that is on National Forest System lands (because detailed road and stream data was not available for lands outside the National Forest Boundary). For this section of the analysis it was assumed that under the No Action alternative ditchlines on all roads still have the potential to increase the stream drainage network. Likewise, all decommissioned roads would no longer have ditchlines with the potential to increase the stream drainage network.

Figure 3.5. Stream drainage network expansion.

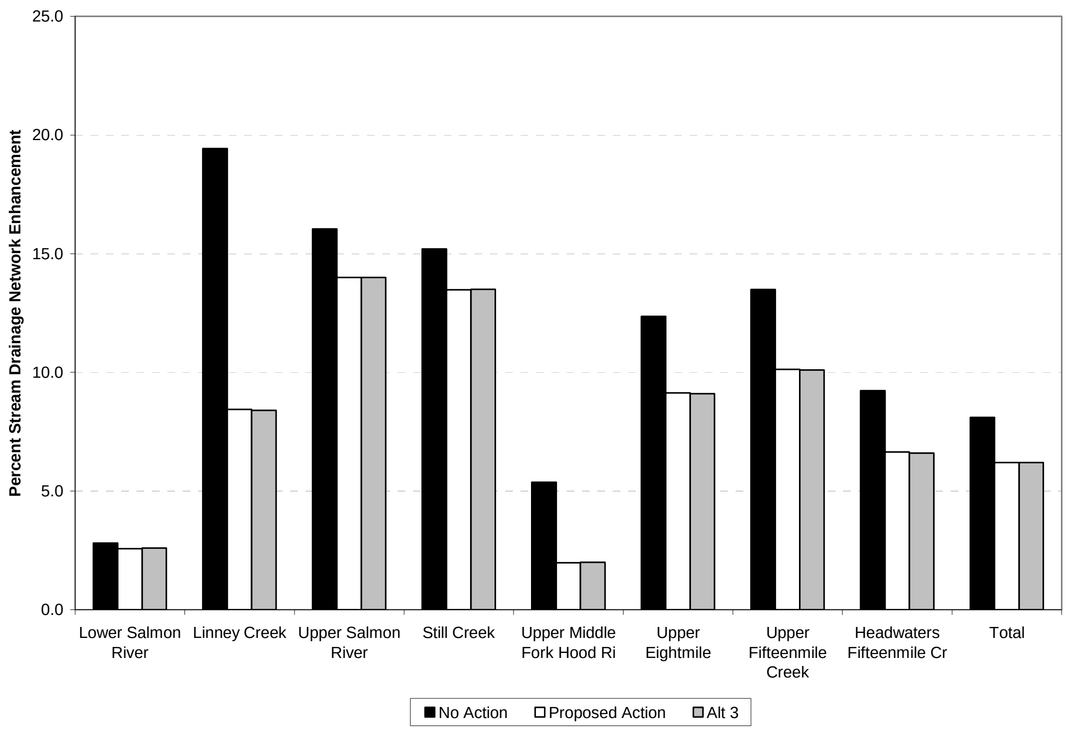


Figure 3.5 and Table 3.2 show that roads currently in the project area increase the channel network length by 8%. Increases in stream drainage network enhancement vary from 3 to 19% based on analysis area.

Table 3.2. Percent stream drainage network expansion.

Subwatershed	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3	Percent reduction between Alternative 1 and Alternative 2
Lower Salmon River	2.8	2.6	2.6	0
Linney Creek	19.4	8.4	8.4	11
Upper Salmon River	16.0	14.0	14.0	2
Still Creek	15.2	13.5	13.5	2
Upper Middle Fork Hood River	5.4	2.0	2.0	3
Upper Eightmile Creek	12.4	9.1	9.1	3
Upper Fifteenmile Creek	13.5	10.1	10.1	3
Headwaters Fifteenmile Creek	9.2	6.6	6.6	3
Total	8.1	6.2	6.2	2

Environmental Effects - Flow Regime

Alternative 1 – No Action

The No Action alternative would not reduce the effects of interception and diversion of subsurface and surface flows for the areas with impervious soil layers by roads. The No Action alternative would not reduce the road ditch related lengths of channel network expansion. Greater stress would be placed on the road drainage system as encroaching woody vegetation reduces drainage structure efficiency. The likelihood of ditch and culvert inlet overflow would increase with time as roads receive less frequent maintenance. The concentrated but uncontrolled flows would likely erode soils and create gullies in road fills. The risk of these adverse effects would increase with time. At this point in time, the nearby stream channels have adjusted to the increased flows from road interception and diversion. As the road drainage loses efficiency with brush encroachment and less frequent maintenance, the risk of debris flows and landslides increases during storms as the road drainage system fails to function effectively.

Alternative 2 – Proposed Action

The Proposed Action alternative would reduce stream drainage network enhancement by 0 to 11% based on the analysis area. There are no expected adverse effects for peak flow increases up to 10%, given the inherent error in peak flow prediction methods and the fact that changes in peak flows of up to 10% are usually below detection limits using standard stream gaging methods. Peak flow increases greater than 10% offer the possibility for adverse effects (DNR 1993). Upper Salmon River, Still Creek and Upper Fifteenmile Creek are the only subwatersheds that would be above the 10% threshold and there are reductions in these subwatersheds bringing the increase very close to 10% threshold of concern for adverse effects. These modeled reductions for the Proposed Action would occur immediately and would continue because a critical part of the natural drainage patterns would be re-established.

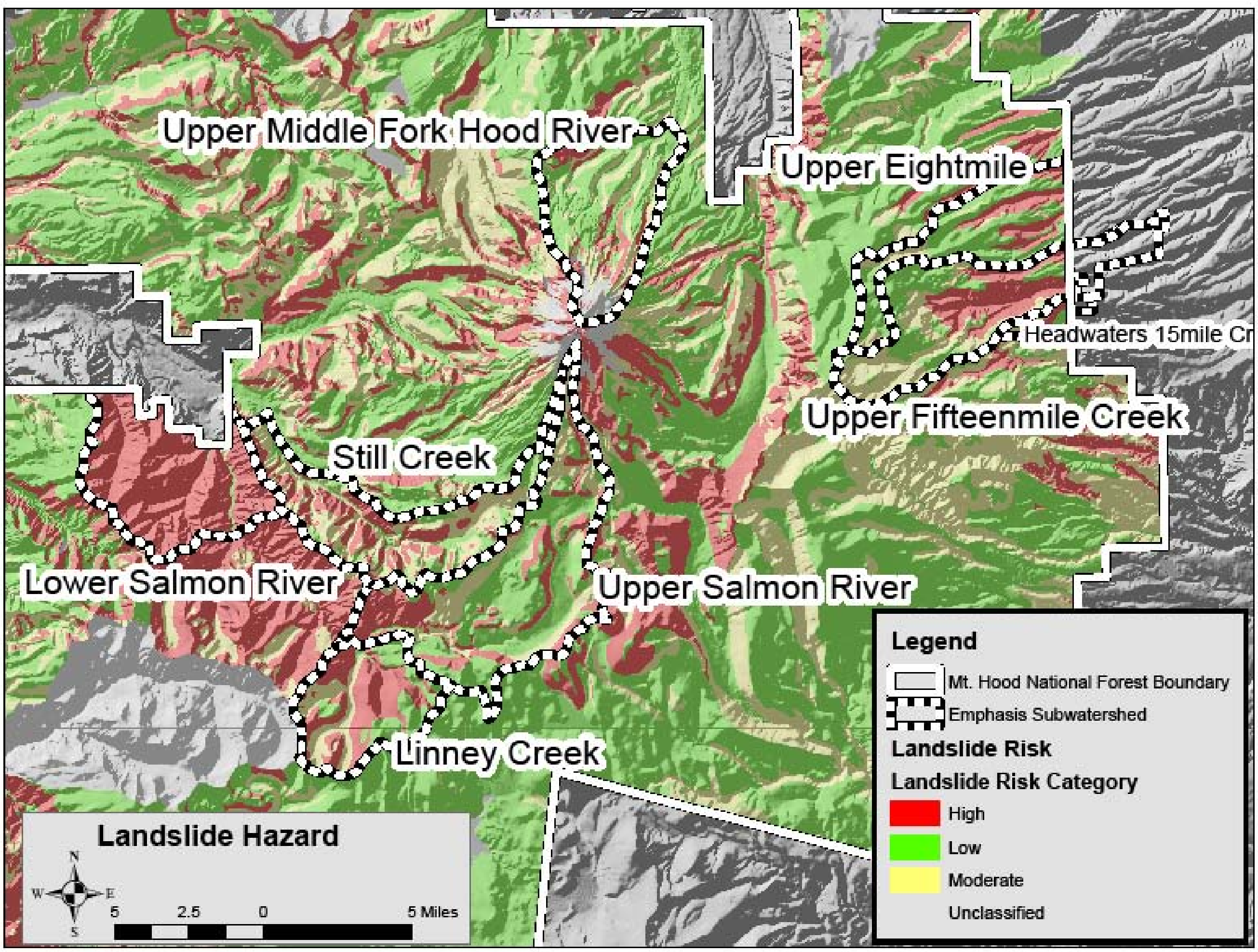
Alternative 3

There are no identified stream crossings associated with the 2.6 miles of road that would not be decommissioned associated with this alternative when compared to the Proposed Action. Since there are no additional stream crossings that would be left open, the impacts associated with stream drainage network enhancement would be the same as the Proposed Action.

Affected Environment – Soils and Geology

Specific soil type information is not practical for this analysis for two primary reasons. First, this project covers a wide geographic area, and therefore there are numerous soil types. Second, and most important, soils within each individual project have been so highly disturbed because of the initial road construction that even with soil maps and interpretations the confidence in accuracy would be extremely low.

Figure 3.6. Landslide hazard.



For the Mt. Hood National Forest's 2003 Roads Analysis, a Forest-wide map of landslide risk was compiled from the geomorphic mapping completed during watershed analysis. Each watershed, and eventually the entire Forest, had been divided into geomorphic map units, primarily based on geologic unit and slope angle. Then each geomorphic map unit had been assigned a qualitative descriptor of its propensity for landslides (high, medium, or low). The assignment of this objective was based on landslide inventories. The map (Figure 3.6) combines all landslide types together.

Road segments located in high landslide-risk polygons tend to have many more times the frequency of landslides than do road segments located in other landforms.
Figure 3.7 and Table 3.3 detail miles of road in high and moderate landslide hazard areas identified in the Roads Analysis.

Figure 3.7. Miles of road in high and moderate landslide hazard areas.

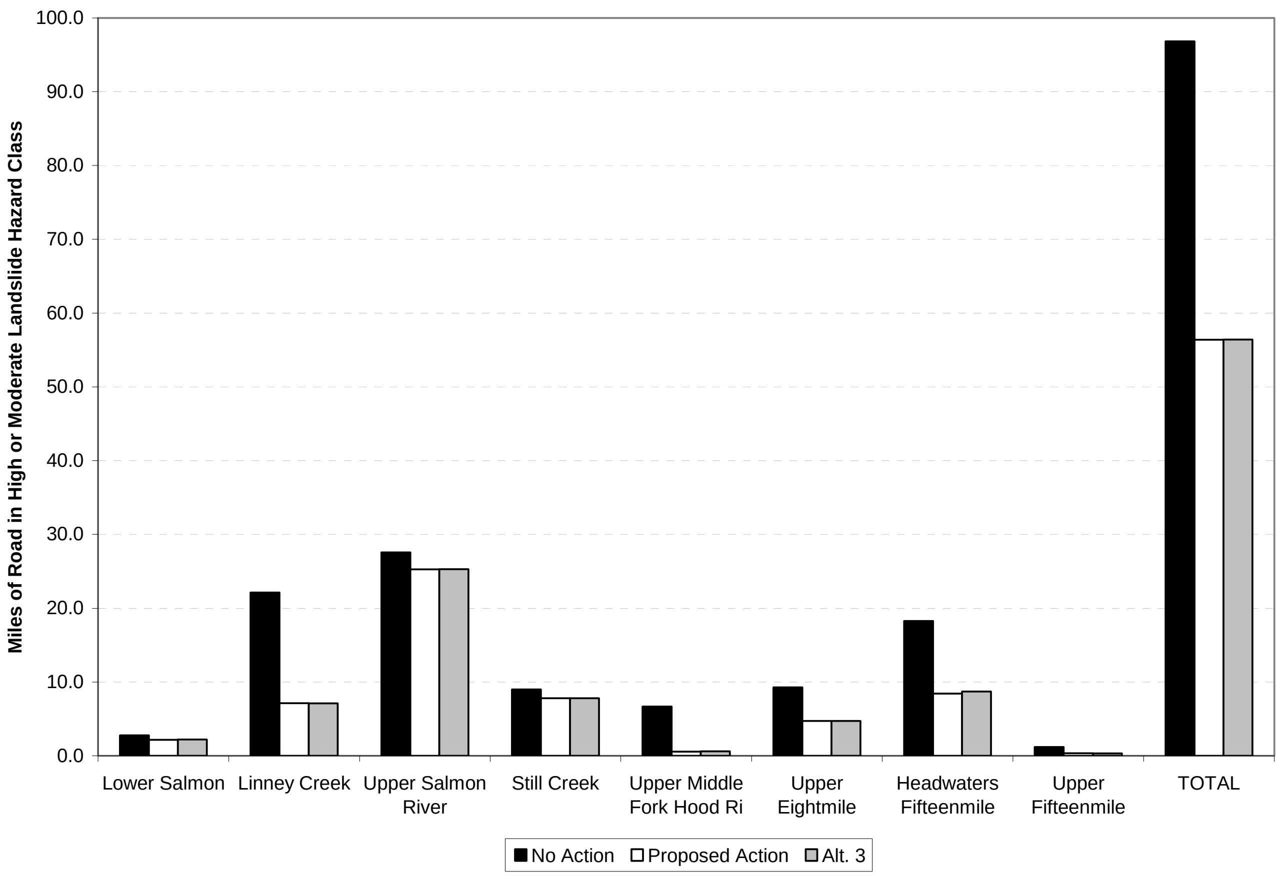


Table 3.3. Miles of road in high and moderate landslide hazard areas.

Subwatershed	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3	Percent reduction between Alternative 1 and Alternative 2
Lower Salmon River	2.8	2.2	2.2	22
Linney Creek	22.1	7.1	7.1	68
Upper Salmon River	27.6	25.3	25.3	8
Still Creek	9.0	7.8	7.8	14
Upper Middle Fork Hood River	6.7	0.6	0.6	91
Upper Eightmile Creek	9.3	4.7	4.7	49
Upper Fifteenmile Creek	18.3	8.4	8.7	54
Headwaters Fifteenmile Creek	1.2	0.3	0.3	72
Total	96.8	56.4	56.4	42

Environmental Effects – Soils and Geology

Alternative 1 – No Action

Because the road system would be left as it is, this is the highest risk alternative in terms of storm events having the potential to move eroded material from exposed road surfaces toward waterways. The risk increases slightly from year to year as maintenance is not done. Also, this analysis details that there are over 90 miles of road in high and moderate landslide hazard classes. The No Action alternative would continue the present risk of landslides associated with the current road system.

Alternative 2 – Proposed Action

Construction projects that involve heavy equipment expose soils and hillslopes to potential erosional forces and, in the short term, increase the risk of soil erosion with possible sediment input to waterways. In this alternative, the risk is minimized to the extent possible during implementation, and following implementation the risk of watershed impacts is greatly reduced as compared to the No Action alternative. The Proposed Action alternative would also reduce the potential of landslides from existing roads by reducing roads in the high and moderate landslide hazard areas, especially in the Linney Creek, Upper Middle Fork Hood River, Upper Eightmile, Headwaters Fifteenmile, and Upper Fifteenmile subwatersheds. In these subwatersheds, reductions are at or close to 50% of the road mileage in the high and moderate landslide hazard classes. This may be especially important with the limited funding available for maintaining these roads.

Alternative 3

Construction projects that involve heavy equipment expose soils and hillslopes to potential erosional forces and, in the short term, increase the risk of soil erosion with possible sediment input to waterways. In this alternative, the risk is minimized to the extent possible during implementation, and following implementation the risk of watershed impacts is greatly reduced as compared to the No Action alternative. In terms of soil impacts, the Alternatives 2 and 3 are very similar, with a slightly lower erosion risk with Alternative 2 due to a few more miles closed. Table 3.4 below summarizes the expected risks in a relative way, one alternative versus the others.

Table 3.4. Soil erosion risk for each alternative.

Alternative	Short term erosion risk during implementation	Long term erosion risk following implementation
Alternative 1 – No Action	Not applicable (lowest)	Highest
Alternative 2 – Proposed Action	Highest	Lowest
Alternative 3	High	Low

The impacts associated with the potential for landslides would be the same as the Proposed Action. The only difference between the two alternatives is an additional 0.3 miles of roads in moderate landslide hazard classification that would not be decommissioned in the Headwaters Fifteenmile subwatershed. This results in a change from 52% reduction in roads in high and moderate landslide hazard areas compared to the Proposed Action at 54%. There is only a 0.3% increase in the percent reduction in roads in the high and moderate landslide hazards areas for the entire project.

Affected Environment – Sediment Yield

Road crossings of drainages create a potential for sedimentation due to the immediate proximity of the road to the stream being crossed. The relatively impermeable surfaces of roads cause surface runoff that bypasses longer, slower, subsurface flow routes to streams. Where roads are insloped to a ditch, the ditch extends the drainage network, collects surface water from the road surface and subsurface water intercepted by road cuts and transports this water quickly to streams. This more rapidly flowing water is moving across a ditch which may not be vegetated, picking up sediment as it erodes. After road construction, this impact lessens, but still persists during storms due to the risk of overtopping of the crossing structure, most commonly culverts. Plugging of the structure by large woody debris or boulders in the streambed can reduce its capacity, and if severe, it can cause overtopping of the structure and damage to the fill on the downstream side of the road. Just as in the Flow Regime section, considering the number of drainage crossings is useful in assessing the risk of erosion and sedimentation from roads.

The erosive power of water increases at the sixth power of its velocity, which reduces the concentration of runoff. Thus, water's velocity is important in preventing erosion and the risk of sedimentation to streams.

In a study completed by the U.S. Geological Survey that assessed variations in stream turbidity within the Bull Run Watershed (LaHusen 1994), it was determined that the most visible sites of erosion are stream channels, streambanks, and roadside ditches.

Sediment yield associated with a properly maintained road network was assessed using the Washington Department of Natural Resource's Standard Methodology for Watershed Assessment. While this method is based on the current scientific understanding of forest management and watershed processes, its predicted outputs should not be considered as exacting measures of potential sediment yield but instead provide a framework for comparing relative effects of sediment delivery between the two alternatives. The methodology does not assess effects from unmaintained road ditches and culverts, but rather it assumes they are functioning properly.

Figure 3.8. Stream crossings by alternative.

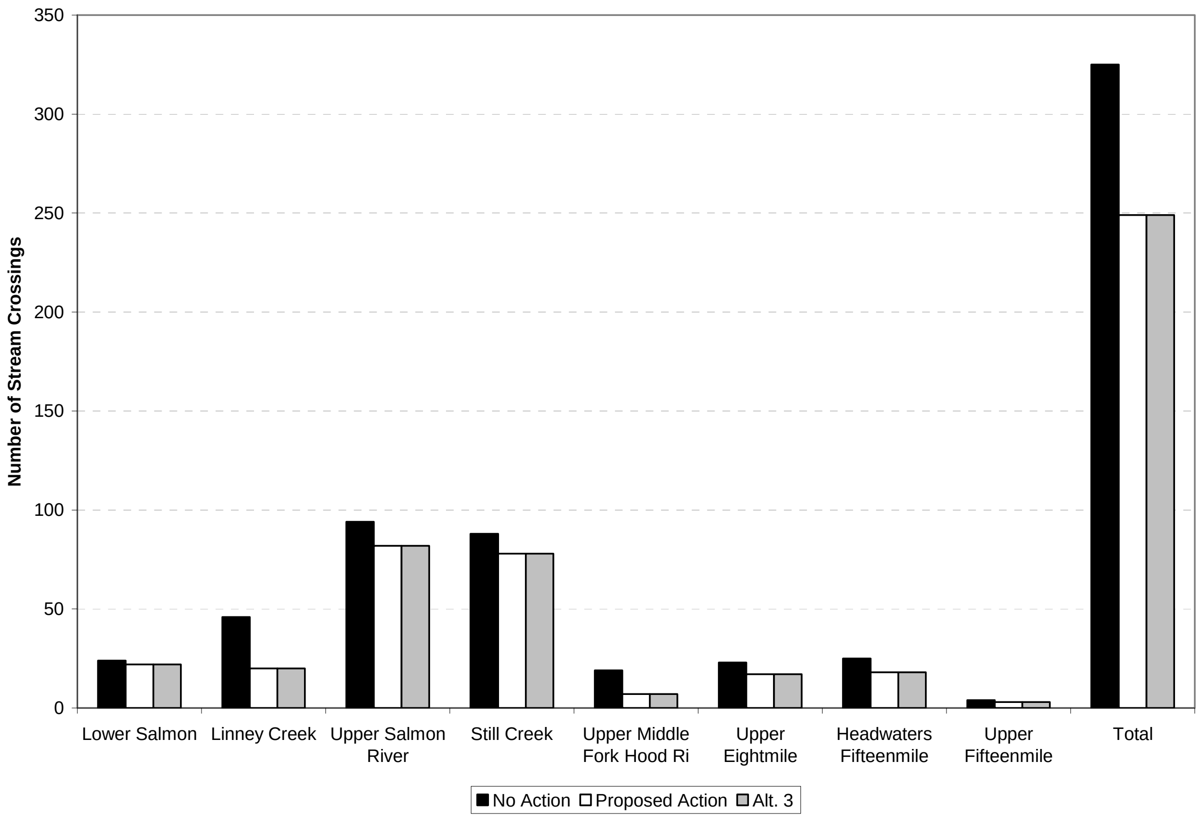


Table 3.5. Stream crossings by alternative.

Subwatershed	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3	Percent reduction between Alternative 1 and Alternative 2
Lower Salmon River	24	22	22	8
Linney Creek	46	20	20	57
Upper Salmon River	94	82	82	13
Still Creek	88	78	78	11
Upper Middle Fork Hood River	19	7	7	63
Upper Eightmile Creek	23	17	17	26
Upper Fifteenmile Creek	25	18	18	28
Headwaters Fifteenmile Creek	4	3	3	25
Total	325	249	249	23

Environmental Effects – Sediment Yield (Short-Term)

Alternative 1 – No Action

There would continue to be chronic amounts of sediment generated from native surface and gravel roads and from ditchlines of all roads as outlined in Figure 3.9 and Table 3.6.

Figure 3.9. Modeled road related sediment delivery (tons/year).

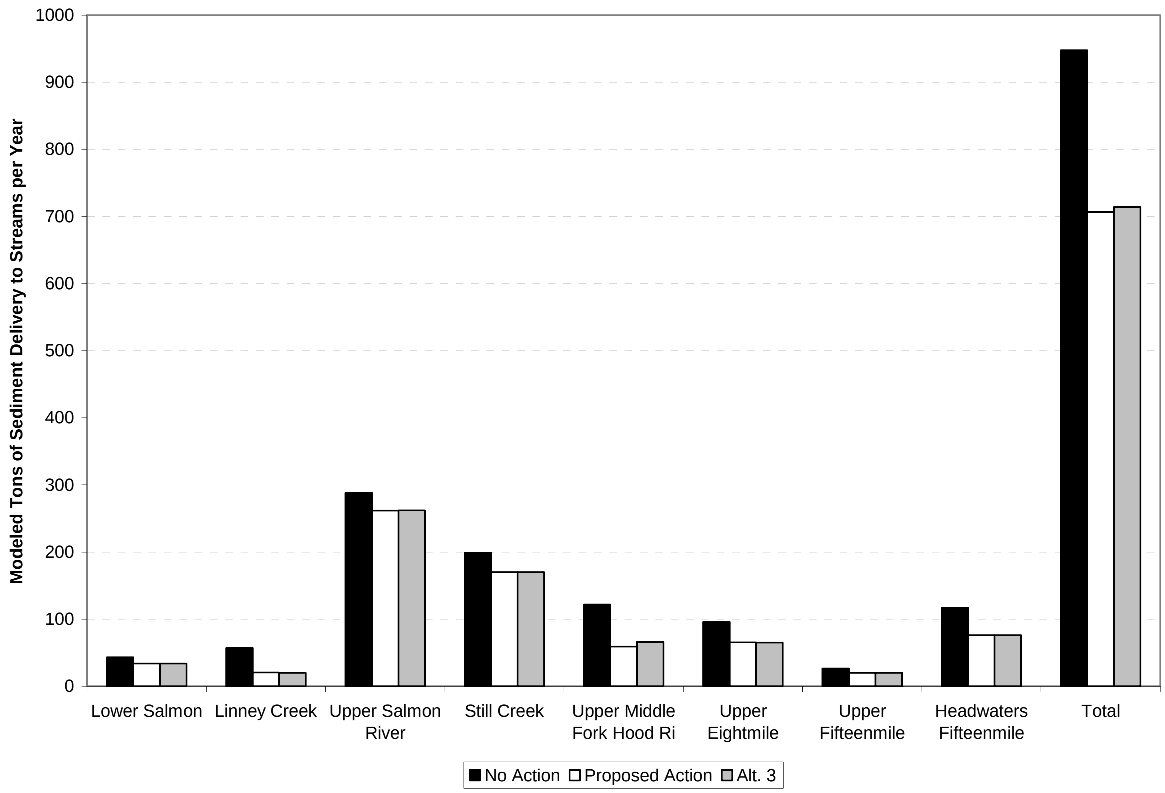


Table 3.6. Modeled road related sediment delivery to streams (tons/year).

Subwatershed	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3	Percent reduction between Alternative 1 and Alternative 2
Lower Salmon River	43	34	34	21
Linney Creek	57	20	20	64
Upper Salmon River	288	262	262	9
Still Creek	199	170	170	15
Upper Middle Fork Hood River	122	59	66	52
Upper Eightmile Creek	96	65	65	32
Upper Fifteenmile Creek	26	20	20	24
Headwaters Fifteenmile Creek	117	76	76	35
Total	948	707	714	25

Short-term measurable increases in sediment transport from the No Action alternative related to plugged culverts and ditchlines may not occur for a number of years depending on the storm intensities that are encountered and the number of miles of roads that have plugged drainage structures.

Alternative 2 – Proposed Action

Based on modeled road related sediment delivery there would be an overall 25% reduction on sediment delivery for the entire project area. Across the associated subwatersheds there would be reductions from 9 to 64%.

In the short term, decommissioning of roads would produce some sediment that would escape the mitigations designed to minimize soil loss at the new stream crossings and cross drains.

In order to quantify the potential short term sediment delivery to the stream system associated with road decommissioning, the Water Erosion Prediction Project (WEPP) soil erosion model was used to quantify sediment deposition to streams.

The WEPP model (http://forest.moscowfsl.wsu.edu/fswepp/docs/distweppdoc.html) is a physically-based soil erosion model that can provide estimates of soil erosion and sediment yield considering the specific soil, climate, ground cover, and topographic conditions. It was developed by an interagency group of scientists including the U.S. Department of Agriculture's Agricultural Research Service (ARS), Forest Service, and Natural Resources Conservation Service; and the U.S. Department of Interior's Bureau of Land Management and Geological Survey. WEPP simulates the conditions that impact erosion, such as the amount of vegetation canopy, the surface residue, and the soil water content for every day in a multiple-year run. For each day that has a precipitation event, WEPP determines whether the event is rain or snow, and calculates the infiltration and runoff. If there is runoff, WEPP routes the runoff over the surface, calculating erosion or deposition rates for at least 100 points on the hillslope. The model then calculates the average sediment yield from the hillslope. WEPP has been shown to produce results useful for decision support, but as with all models, users are urged to test the models with locally available empirical data (Renschler 2002).

For this project, erosion and associated sedimentation were calculated for each stream crossing (actual decommissioned hillslopes where culverts were removed within the Bull Run watershed were used to estimate the area associated with crossings) and aggregated up for each analysis area.

The WEPP analysis was completed for 50 years of climate data and resulted in an average yield for the entire project area of 0.6 tons of sediment delivery per year. Based on the return period analyzed, the short-term sediment yield varies considerably. For the 2.5 year return period event, the annual yield is 0.2 tons per year for the project area (all associated with the Linney Creek subwatershed). The 50 year return period event results in 21.7 tons per year for the project area.

Table 3.7. Short-term sediment yield based on WEPP analysis.

Subwatershed	50 year event	Average event	2.5 year event
Lower Salmon River	0.5	0.0	0.0
Linney Creek	12.4	0.4	0.2
Upper Salmon River	3.0	0.1	0.0
Still Creek	2.5	0.1	0.0
Upper Middle Fork Hood River	3.0	0.1	0.0
Upper Eightmile Creek	0.2	0.0	0.0
Upper Fifteenmile Creek	0.0	0.0	0.0
Headwaters Fifteenmile Creek	0.1	0.0	0.0
Total	21.7	0.6	0.2

In the second winter following the drainage structure removal, erosion and delivered sediment should decrease further due to settlement of loose soils, re-vegetation, armoring of the soil surface by an erosion pavement of gravel in the soils. Woody plants should become more significant in providing canopy cover and soil binding capability in three to five years depending on the favorability of the growing site and success in plant establishment, by planting, natural seeding, and re-sprouting.

Based on experience and monitoring results from activities associated with the 1999 Bull Run Road Decommissioning EA, there are generally some short term pulses of sediment following the first large stream flow event after culvert removal activities and after that point the stream crossing is stabilized and turbidity levels are the same upstream and downstream of the road crossing.

Alternative 3

The impacts associated with modeled road related sediment delivery would be very similar to the Proposed Action. The only difference between the two alternatives is an additional seven tons of sediment delivered to the stream system in the Upper Middle Fork Hood River subwatershed. This results in a change from 46% reduction in roads in high and moderate landslide hazard areas compared to the Proposed Action at 52%. There is no increase in the modeled road related sediment delivery percentage (at the whole percentage level) for the entire project.

There are no stream crossings associated with the 2.6 miles of road that would not be decommissioned under Alternative 3 as compared to the Proposed Action; therefore, based on WEPP analysis, the short term sediment yield would be the same as the Proposed Action.

Environmental Effects – Sediment Yield (Long-Term)

Alternative 1 – No Action

To properly understand the potential risks of sediment production, it is important to look beyond the modeling of current sediment production, which assumes that all roads are maintained, as the Proposed Action alternative analysis does. Under the No Action alternative the roads would not receive proper maintenance due to funding limitations. Currently, some roads have become sufficiently invaded by brush (red alder, willows, maple, scotch broom, and hemlock) so that vehicle travel is no longer possible. This also means that the ditches and culvert inlets are fully occupied by woody vegetation and that these inlets likely have a significantly reduced flow capacity. The potential for culvert plugging and flow overtopping the roadway is greatly increased. This directly increases the potential for fill erosion as the overflow spills down the road fill (Figure 3.10). If flows are sufficiently large or continuous, a headcut scarp would develop at the toe of the fill and progress upslope. If not stopped, the entire road fill may be eroded by the new drainage location. The volume of lost fill would relate to the fill steepness, the volume and duration of water discharge, and the size of the fill at the drainage structure.

Figure 3.10. Example of catastrophic fill and culvert failure from the Mt. Hood National Forest Roads Analysis

Another possible scenario is the plugging of a ditch relief culvert causing increased flow to continue past the culvert inlet on the road and ditch to the next ditch relief culvert. The ditch in the second reach below the plugged culvert must now accommodate about twice its normal runoff. Since brush has reduced culvert inlet capacity and additional flow is probably eroding the ditch and moving sediment to the inlet, the likelihood of culvert plugging is increased greatly. It is also important to realize that in the project area larger storms create many small drainages, which enter the road ditches and add to ditch flow. Eventual overtopping of the culvert is probable and flow actively eroding across the road and fill.

A third scenario applies to the present aging of the culverts in the project area. Most culverts are about 30 years old and are approaching their expected design life. As the bottom of culverts rust through, flow would continue underneath the culvert. This would allow erosion of the fine materials that were used to bed the culvert when it was installed. Settling would result and additional strain to the culvert structure would occur. Eventually, the culvert would collapse gradually and lose its capacity. Eventual overtopping of the culvert and road is probable and severe erosion of the fill would ensue.

To predict the potential volume of sediment produced from culvert plugging is simply not possible, but it is not extreme to think that it would be considerably more than the volumes predicted for a properly maintained road if considered over a ten year timeframe. Based on roads decommissioned under the 1999 Bull Run Road Decommissioning EA, fills associated with perennial stream crossings varied from 300 to 3000 cubic yards of fill (based on local site conditions including stream size, road slope position, and steepness of the area). In a large storm, it would not be unreasonable for five to ten culverts to fail resulting in 1,500 to 30,000 tons of sediment delivered to the stream system (for this analysis and based on soil composition one cubic yard of soil equated to one ton of sediment). In the No Action alternative, there is a risk of erosion, sedimentation, and downstream effects to turbidity and suspended sediment conditions associated with catastrophic failure of culverts and/or road fill slopes. Eventually, if not maintained, nearly all of the drainage crossings would plug, and fills would be eroded and transported as sediment.

<u>Alternative 2 – Proposed Action</u>

The Proposed Action alternative would reduce the number of stream crossings from 325 to 249. It is assumed that the decommissioned roads in the Proposed Action alternative are no longer producing sediment because natural drainage patterns have been restored. This comparison is applicable for the long-term evaluation of impacts after the short-term effects of soil disturbance and stream channel re-establishment have passed.

Figure 3.9 and Table 3.6 detail estimates of sediment delivery attributed to properly maintained roads. Also detailed are the reductions in sediment delivery associated with implementation of the Proposed Action. The Proposed Action would provide a 25% reduction in sediment delivery for the project area.

Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur under the No Action alternative. In addition, limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines which may reduce potential for catastrophic failure.

<u>Alternative 3</u>

There are no stream crossings associated with the 2.6 miles of road that would not be decommissioned under Alternative 3, as compared to the Proposed Action. Therefore, the long-term sediment impacts would be the same as the Proposed Action.

Watershed Processes - Cumulative Effects

A cumulative effect analysis was performed for watershed processes where adverse direct and/or indirect effects associated with the proposed action were identified. For this project these processes include short-term sediment delivery associated with streambanks and adjacent slopes where stream drainage structures, such as culverts, are removed.

There were three subwatersheds (Upper Salmon River, Still Creek, and Upper Middle Fork Hood River) with 0.1 tons per year of sediment yield associated with project implementation. These subwatersheds were eliminated from cumulative effects analysis because of the very small (2 cubic feet of sediment yield per year) amount of sediment generated. The Linney Creek subwatershed (10,190 acres), however, has approximately 0.4 tons per year of sediment yield associated with project implementation. Therefore, this subwatershed was used for the cumulative effects analysis areas.

Table 3.8. Linney Creek - Past, Present, and Reasonably Foreseeable Projects

Project	Sediment Yield (tons per year)
Off-Highway Vehicle EIS	Reduction in sediment delivery to streams associated with closure of all areas and roads in Linney Creek to OHV's.
Invasive Plant EIS	No impacts predicted to short-term sediment yield.
Modeled Road Related Sediment	20 tons per year
Recreation Activities (from Salmon River Watershed Analysis)	3.8 tons per year
Proposed Action	0.4 (total yield in tons, from analysis for road decommissioning project)

As detailed by Table 3.8, the amount of short-term sediment associated with surface erosion at decommissioned stream crossings is very small when compared to the modeled amounts of sediment from the existing road system. The amount of sediment associated with the decommissioned stream crossings is only 2% of the subwatershed total and will be spread out among many stream crossings. This increase in sediment is not anticipated to have any adverse impacts on the aquatic system.

Conclusion

Table 3.9 below highlights the main differences between alternatives based on the three water quality elements.

Table 3.9. Comparison of alternatives.

Items of Comparison	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3
Flow Regime			
Miles of road	268.7 miles	184.6 miles	187.2 miles
Channel network expansion by roads	8.1%	6.2%	6.2%
Soils and Geology			
Roads in high and moderate hazard areas for landslides	96.8 miles	56.4 miles	56.1 miles
Sediment Yield			
Number of stream crossings	325	249	249
Road related sediment delivery (modeled tons/year) for properly maintained roads	948 tons/yr	707 tons/yr	714 tons/yr
Short term estimated road sediment production	No change	0.6 tons/yr	0.6 tons/yr
Long term estimated road sediment production	100 times increase	No change	No change

Compliance with the Clean Water Act, Mt. Hood Land and Resource Management Plan, and Aquatic Conservation Strategy Objectives

Clean Water Act

It is the responsibility of the Forest Service as a Federal land management agency, through the implementation of the Clean Water Act (CWA), to protect and restore the quality of public waters under their jurisdiction. Protecting water quality is addressed in several sections of the CWA, including sections 303, 313, and 319. Best Management Practices (BMPs) are used to meet water quality standards (or water quality goals and objectives) under Section 319 (Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters (http://www.fs.fed.us/r6/water/protocol.pdf)).

Current statewide Water Quality Standards for the State of Oregon state: "Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this Division" (Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters) (http://www.fs.fed.us/r6/water/protocol.pdf)).

In addition, the Mt. Hood Land and Resource Management Plan contains the following Standards and Guidelines with respect to the implementation of BMP's:

- FW-055 and FW-056: Compliance with State requirements should be met through planning, application, and monitoring of Best Management Practices FEIS (Appendix H). Best Management Practices describe the process which should be used to implement the State Water Quality Management Plan on lands administered by the USDA Forest Service.

- FW-057 and FW-058: Individual, general Best Management Practices which may be implemented (i.e., on a project by project basis) are described in General Water Quality Best Management Practices, Pacific Northwest Region, 11/88. Evaluations of ability to implement and estimated effectiveness should be made at the project level.

- FW-059: The sensitivity of the project should determine whether the site-specific BMP prescriptions are included in the environmental analysis, the project plan or the analysis files.

Water Quality Best Management Practices, with the purpose of limiting non-point source water pollution, are incorporated into the proposed action and associated project design criteria.

Section 303D

Section 303(d) of the CWA requires that waterbodies violating State or tribal water quality standards be identified and placed on a 303(d) list. The Environmental Protection Agency (EPA) regulations allow States and tribes to include threatened waters (that is, waters that display a downward trend suggesting water quality standards will not be met in the near future).

For each listed waterbody, the CWA requires States to establish a Total Maximum Daily Load (TMDL) for the parameter(s) causing beneficial use impairment. A TMDL is the sum of the waste load allocation for point sources of pollution (for example, outflow from a manufacturing plant) plus the load allocation for nonpoint sources of pollution, including "natural" background levels, plus a margin of safety to allow for uncertainty.

For water quality limited streams on National Forest System lands, the Forest Service provides information, analysis, and site-specific planning efforts to support state processes to protect and restore water quality. Currently, the Miles Creek Basin is in the process of TMDL development. Once the TMDL plan is completed, streams would be removed from the 303(d) list and stream recovery would be achieved through an implementation plan. Currently, the Fifteenmile Watershed (which contains streams within the project's planning area) is on the 2004/2006 State of Oregon 303(d) list. Table 3.10 below highlights the criteria associated with the Fifteenmile Watershed.

Table 3.10: 303(d) listed waterbody and associated criteria.

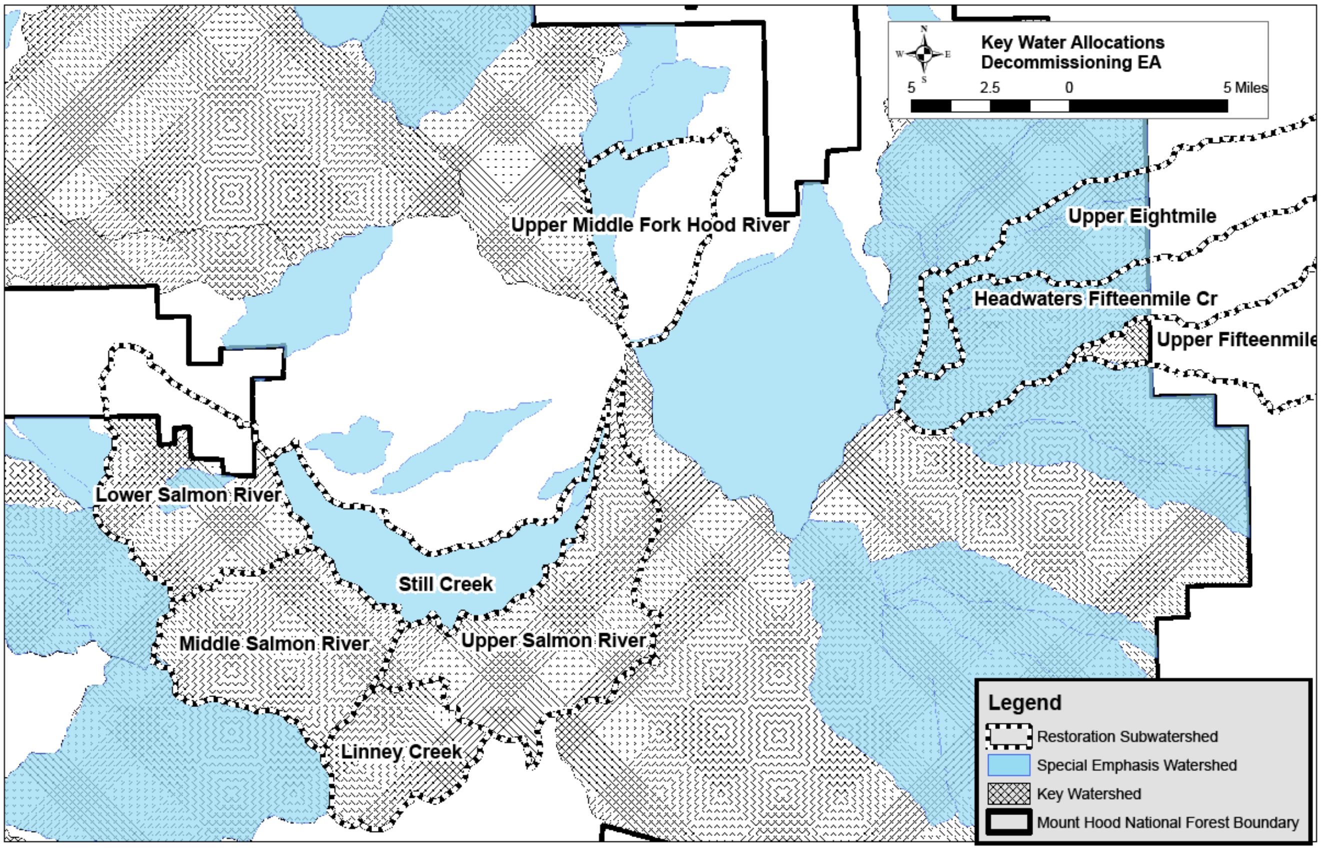
Watershed	Fifteenmile (261,472 acres)
Watershed Identifier	1707010504
303(d) Listed Parameters	Sediment, Temperature
Key Resources and Uses	Salmonid fish rearing and spawning, resident fish and aquatic life
Known Impacts	System and non-system roads, ditch lines, culverts, tractor harvest units, recreational trails, campgrounds, dispersed campsites, bank erosion, highly erosive soils, and low resiliency soils.

Alternative 2 – Proposed Action and Alternative 3 are designed to limit erosion and associated sediment delivery to streams from unneeded roads in the Headwaters Fifteenmile, Upper Eightmile, and Upper Fifteenmile subwatersheds, which are all in the Fifteenmile Watershed. Therefore, the action alternatives may have a beneficial impact in the watershed. Additionally, both action alternatives would be compliant with the CWA.

Consistency with the Forest Plan Standards and Guidelines

Key Mt. Hood Land and Resource Management Plan allocations, with respect to protection of the aquatic environment, include: Key Watersheds, Special Emphasis Watershed, Riparian Reserves and Riparian Area.

Figure 3.11. Key Watersheds and Special Emphasis Watersheds



Key Watersheds

Key Watersheds are a system of large refugia comprising watersheds that are crucial to at-risk fish species and stocks and provide high quality water. The Aquatic Conservation Strategy includes two designations for Key Watersheds: Tier 1 and Tier 2. Tier 1 (Aquatic Conservation Emphasis) Key Watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program. The network of 143 Tier 1 Key Watersheds ensures that refugia are widely distributed across the landscape. While 21 Tier 2 Key Watersheds may not contain at-risk fish stocks, they are important sources of high quality water.

Standards and guidelines for Key Watersheds include:

- Reduce existing system and nonsystem road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.

- Key Watersheds are the highest priority for watershed restoration.

The entire Salmon River and Miles Creek Watersheds are Tier 1 Key Watersheds. The Proposed Action and Alternative 3 are consistent with Standards and Guidelines by reducing existing system road mileage.

Special Emphasis Watersheds

The goal of Special Emphasis Watersheds is to maintain or improve watershed, riparian, and aquatic habitat conditions and water quality for municipal uses and/or long-term fish production. Still Creek, Lower Salmon River, Upper Middle Fork Hood River, Upper Eightmile and Headwaters Fifteenmile Creek subwatersheds have at least of portion of their area in this allocation. Major characteristics include that the transportation system design may be restricted to avoid sensitive watershed lands. Standards and guidelines include:

- Roads and associated facilities should be permitted, when consistent with the protection of watershed values.
- Road crossings of fish-bearing streams should be designed to provide for adult and juvenile fish passage.
- Drainage systems of roads or parking areas should incorporate practical features to minimize or eliminate sediment and/or other pollutants from discharging directly into water bodies.

The Proposed Action and Alternative 3 are designed to protect watershed values, provide for fish passage, and minimize sediment delivery to streams from the road system; therefore, these alternatives are consistent with standards and guidelines for Special Emphasis Watersheds.

Riparian Reserves

Riparian Reserves are portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. Standards and guidelines prohibit and regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Riparian Reserves include those portions of a watershed directly coupled to streams and rivers, that is, the portions of a watershed required for maintaining hydrologic, geomorphic, and ecologic processes that directly affect standing and flowing waterbodies, such as lakes and ponds, wetlands, streams, stream processes, and fish habitats. Riparian Reserves include areas designated in current plans and draft plan preferred alternatives as riparian management areas or streamside management zones and primary source areas for wood and sediment, such as unstable and potentially unstable areas in headwater areas and along streams. Riparian Reserves occur at the margins of standing and flowing water, intermittent stream channels and ephemeral ponds, and wetlands. Riparian Reserves generally parallel the stream network, but also include other areas necessary for maintaining hydrologic, geomorphic, and ecologic processes.

Consistency with Riparian Reserve Standards and Guidelines for roads within the Riparian Reserves is assessed by addressing consistency with the Aquatic Conservation Strategy objectives. However, there are Riparian Reserve Standards and Guidelines that address:

- Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.

- Closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.

- Minimizing sediment delivery to streams from roads.

- Providing and maintaining fish passage at all road crossings of existing and potential fish-bearing streams.

An assessment of consistency with the Aquatic Conservation Strategy objectives is completed later in this section. The Proposed Action and Alternative 3 are designed to minimize disruption of natural, hydrologic flow paths, minimize sediment delivery and provide for fish passage.

General Riparian Area

The goal of General Riparian Area is to achieve and maintain riparian and aquatic habitat conditions for the sustained, long-term production of fish, selected wildlife and plant species, and high quality water for the full spectrum of the Forest's riparian and aquatic areas. Key Standards and Guidelines include:

- Road crossings of fish-bearing streams should be designed to provide for adult and juvenile fish passage.

- Drainage systems for roads should incorporate practical features to minimize or eliminate sediment and/or other pollutants from discharging directly into streams, lakes, wetlands, springs, or seeps.

- Existing roads causing impacts to riparian values should be mitigated or relocated.

- Unneeded and/or abandoned roads should be rehabilitated.

The Proposed Action and Alternative 3 are designed to meet objectives for General Riparian Area including providing for fish passage and minimizing sediment delivery to streams.

<u>Aquatic Conservation Strategy Consistency Findings</u>

The following is a summary of the projects consistency with the Aquatic Conservation Strategy objectives (NWFP ROD B-10).

Objective 1: Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

The project is designed to restore natural drainage patterns (both surface and subsurface) which will restore natural travel paths for aquatic organisms by removing barriers. Removing roads has the potenial to restore floodplain connectivity, reduce aquatic habitat fragmentation; thus increasing the complexity of stream habitat. By restoring natural flowpaths for water, sediment and large woody debris channel components that contribute to channel complexity (pool quantity and quality, substrate, flows) will be enhanced.

Objective 2: Maintain and restore spatial and temporal connectivity in and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Restoring natural drainage patterns will restore spatial and temporal connectivity because riparian areas associated with stream crossings will become continuous, and surface and subsurface flows will follow natural patterns.

Objective 3: Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Removal of roads including culverts restores streambanks and bottom configurations at stream crossings. By using stream simulation methods in designing stream crossings natural streambank and streambed configurations will be established above, through and below the existing stream crossings.

Objective 4: Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

The project has the the objective of restoring or improving water quality by reducing existing chronic sediment sources and/or by reducing the risk of catastrophic failure of stream crossings. There may be short-term impacts to water quality (increased sedimentation) when the projects are implemented (during culvert removal). However, project design criteria were developed to minimize these impacts and keep them to an acceptable level.

Objective 5: Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Road decommissioning has the potential of maintaining or restoring the sediment regime, by removing obstructions or pinch points where sediment transport is impeded. In addition chronic sediment sources associated with the road surface and ditchlines will be removed.

Objective 6: Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

This project is designed to restore in-stream flows and provide for natural hydrologic and sediment regimes. By reducing stream drainage network enchancement and removing impervious surfaces associated with the road thus restoring natural flowpaths stream flow routing efficiency will approximate undisturbed levels and will not result in increased magnitude of peak stream flows. Improvement of stream crossings and restoration of areas where streams have been channelized or narrowed will reduce risks of increased peak flows which can result in bank erosion and channel bed scour. Removal of stream crossings and restoration of the crossing using stream simulation techniques will provide for sediment, nutrient, and wood routing.

Objective 7: Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Road decommissioning will restore natural hillslope flow processes, re-establishing natural drainage patterns, and provide for restoration of floodplain inundation characteristics.

Objective 8: Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

Areas impacted by the implementation this project will be planted, seeded, and/or mulched. Seed may be native plants or non-persistent non-natives. These plants will rapidly provide ground cover, thereby reducing erosion. They will be replaced by native plants in a few years. Road decommissioning and associated culvert removal should reduce surface erosion, bank erosion, and restore channel migration.

Objective 9: Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Road decommissioning activities restore vegetation, streamflow, and erosion patterns, enhancing terrestrial and aquatic plant and animal populations.

3.3 Fisheries

Affected Environment

Aquatic habitat conditions across the Forest vary depending on the location, past land management activities, and natural events such as floods, fire and debris torrents. In general, streams that have experienced little to no land management are in good condition, even though Forest Plan standards (pools per mile, pieces of wood per mile, etc.) are not always met. Some of these streams have been impacted by natural events and, indeed, were formed or maintained by such events. Glacial streams such as Eliot Branch on the Hood River Ranger District is an example of a stream exhibiting relatively degraded conditions due to natural events (such as repeated glacial debris flows).

Fish habitat conditions vary by stream segment in watersheds where land management activities have occurred. Conditions range from poor to good, depending on the type and scale of disturbance, proximity to streams, and duration of land management activities. On the westside of the Cascades, watersheds have been affected by logging, dams, road construction, recreation and past flood control activities. A limited amount of grazing has occurred in the headwaters of Salmon River watershed. On the eastside, past land management activities contributing to degraded aquatic habitat have included logging, road construction, irrigation, agriculture, and grazing. Separately and cumulatively, these activities have resulted in some loss of connectivity, reduction of stream shading, alteration in riparian vegetation and function, increased sedimentation, reduced instream large woody debris, and loss of pools from historic reference conditions.

Despite past impacts, most streams or stream segments contain good quality habitat. Since the early 1990s, clear-cut and thinning timber harvests on the Forest have declined over 90 percent. During the past ten years, over 410 miles of roads (representing about 10 percent of the road system) have been decommissioned and hydrologic function has been restored on the decommissioned segments (2003 Mt. Hood National Forest Roads Analysis). Clear-cut timber harvests and road construction were the source of most human-generated sediment on the Forest, and all watersheds on the Forest have improved watershed conditions (2004 Forest Monitoring Report).

Proposed, Endangered, Threatened, or Sensitive (PETS) Fish and/or Aquatic Species located in (or downstream) of the Project Area

The Forest uses salmonids (salmon, trout and char) as management indicator species for aquatic habitats. Due to their value as game fish and their sensitivity to habitat changes and water quality degradation, salmonids are used to monitor trends within Forest streams and lakes. Although other fish species may be present (e.g., sculpins, lamprey, and dace), population status and trends are unknown. Since more information exists on salmonids, this group serves as a more optimum choice for monitoring aquatic environments.

The Forest is home to several populations of salmon, steelhead, and resident trout. There are over 1,600 miles of fish-bearing streams on the Forest, with about 300 miles supporting anadromous populations of salmon and steelhead.

Most salmonids that reside in the Forest’s streams are an important cultural, economic, and recreational resource. A number of species are listed as endangered or threatened under the Endangered Species Act (ESA), or are sensitive species identified by the USDA Forest Service, Pacific Northwest Region, Regional Forester (Table 3.11), by distinct population segment (DPS) or evolutionary significant unit (ESU), which are large geographic areas that usually contain several subpopulations of the species considered to be in the same metapopulation. For example, a Lower Columbia River ESU steelhead would not be expected to breed with a Middle Columbia River ESU steelhead, even though they are the same species.

Listed or sensitive species in Table 3.11 were federally listed or designated as sensitive for a number of factors. Although there are different reasons for their current status, common issues include impaired fish passage at dams and other obstructions, commercial and recreational fishing, habitat modification and/or loss, hatchery influences, and pollution. Hydropower, irrigation, domestic water supply, and flood control dams have disrupted migrations and eliminated historically available habitat. Commercial and recreational fishing have reduced numbers of wild fish in some populations. Habitat has been degraded, simplified, and fragmented due to a variety of land management activities. Hatchery programs have strongly influenced populations, partly by masking declines in naturally spawning fish and dilution of native gene pools due to interbreeding. Reduced water quality from both point and non-point sources has had an impact at localized, and even regional scales, in some watersheds. Impacts to the aquatic mollusk and caddis fly have primarily been from habitat modification and water quality degradation.

Several Federally listed PETS salmon and steelhead stocks are known to be present in the Clackamas River basin of the Clackamas River Ranger District, and steelhead stocks in the Mill Creek Basin of the Hood River Ranger District. These stocks are *not* discussed or analyzed in this document because the proximity of the proposed actions are not located on any road systems located in the Clackamas River basin or Mill Creek Basin.

Table 3.11. Special status (threatened, endangered, or R6 sensitive) aquatic species found in watershed basin streams of the proposed action. The date after the listing status is the date of listing.

Species	DPS/ESU	Status	Major River Systems Where Found
Bull Trout (*Salvelinus confluentus*)	Columbia River DPS	Threatened 5/98	Hood River
Steelhead Trout (*Oncorhynchus mykiss*)	Lower Columbia River ESU	Threatened 3/98	Sandy River, Hood River,
Steelhead Trout	Middle Columbia River ESU	Threatened 3/99	Fifteenmile, Fivemile
Chinook Salmon (*O. tshawytscha*)	Lower Columbia River ESU	Threatened 3/99	Sandy River, Hood River
Chum Salmon (*O. keta*)	Columbia River ESU	Threatened 3/99	Sandy River
Coho Salmon (*O. kisutch*)	Lower Columbia River ESU	Threatened 6/05	Sandy River, Hood River
USDA Forest Service, Pacific Northwest Regional Foresters Special Status Species (Aquatic)			
Interior Redband Trout (*O. mykiss*)	Not Applicable (N/A)	Sensitive 7/04	Fifteenmile, Fivemile
Columbia duskysnail (*Colligyrus sp. nov.1*)	N/A	Sensitive - 7/04, and Special Status Species – 1/08	Throughout Forest
Barren Juga (*Juga hemphilli hemphilli*)	N/A	Special Status Species 1/08	Throughout Forest/
Purple-lipped Juga (*Juga hemphilli maupinensis*)	N/A	Special Status Species 1/08	Wasco County, Lower Deschutes, and Warm Springs Basins
Scott's Apatanian Caddisfly (*Allomyia scotti*)	N/A	Special Status Species 1/08	High timberline elevations of the Whiter River and Salmon River watersheds

Columbia River Bull Trout

The only known population of bull trout in the Forest is found in the East Fork Hood River and Lower Hood River fifth-field watersheds. Bull trout presence in the Forest has been documented in the Middle Fork Hood River, Clear Branch (both above and below Clear Branch Dam), Pinnacle Creek, Coe Branch, Eliot Branch, Bear Creek, and the mainstem Hood River. Most bull trout in the Middle Fork Hood River are found primarily in Laurance Lake (reservoir), Clear Branch, and Pinnacle Creeks. Clear Branch Dam, completed in 1969, has effectively split the Hood River bull trout population into two segments. Above the dam, the population of bull trout is believed to exhibit primarily an adfluvial life history: adult fish reside in the reservoir and move into Clear Branch or Pinnacle Creek as early as June, spawn mainly during September, and move back into the reservoir to spend the winter. There may be a fluvial (completely stream dwelling) population component above the reservoir as well.

Below Clear Branch Dam it is believed there are fluvial and adfluvial subpopulations present, but relatively little is known about this segment of the overall population. A small number of individuals annually migrate into the Hood River from the Columbia River, and some individuals have returned more than once (Hood River Soil and Water Conservation District, 2004; Rod French, Oregon Department of Fish and Wildlife, personal communication). Other large bull trout have been observed below Clear Branch Dam that are not tagged, thus leading biologists to believe there may be a wholly stream resident population as well.

Bull trout reach sexual maturity between four and seven years of age and are known to live as long as 12 years. Bull trout spawn in the fall, and require clean gravel and very cold-water temperatures for spawning and egg incubation. Bull trout fry utilize side channels, stream margins, and other low velocity areas. Adults require large pools with abundant cover in rivers. Presumably, the various forms of bull trout interbreed, which helps to maintain viable populations throughout their range.

Lower Columbia River Steelhead

Lower Columbia River steelheads are found in the Sandy River and Hood River basins. Adult winter steelheads enter rivers and streams on the Forest primarily from March through June. A small run of summer steelhead occurs in the Hood River. These fish enter the mainstem Hood River from June through September, over winter in larger tributaries or the mainstem, and spawn the following spring. Adult steelheads spawn in late winter to spring (January–June), depending in part on the run type (summer or winter steelhead), stream discharge, and water temperature. Steelhead fry emerge from the gravel between late June and late July, and rear in freshwater habitat for one to three years. Yearling juvenile steelheads are usually found in riffle habitat, but some of the larger juvenile steelhead will be found in pools and faster runs. Smolt emigration takes place primarily from March through June during spring freshets.

In regards to habitat utilization, steelheads are more of an opportunist anadromous species compared to salmon. As such, they are often more widespread and can utilize smaller streams more readily than many salmon species. Their stronghold habitats on the Forest tend to be larger rivers and streams.

Middle Columbia River Steelhead

Middle Columbia River steelheads are present in both Fifteenmile and Fivemile Creek fifth-field watersheds. This stock is the easternmost run of wild winter steelhead trout in the Columbia River basin, and thus, is unique at local and regional scales. Steelhead have been documented upstream of the Forest boundary in Fifteenmile Creek, Ramsey Creek, Fivemile Creek, and

Eightmile Creek. Life history information and run timing is similar to that described for Lower Columbia River winter steelhead.

Lower Columbia River Chinook

Lower Columbia River chinook salmon occur in the Sandy River and Hood River basins. This ESU is made up of both spring and fall run components. Both fall and spring runs occur in the Hood River and Sandy systems.

Most spring chinook salmon in the Hood River basin ascend the West Fork Hood River, and based on available information, use appears to be low in the East and Middle Forks of the Hood River. Fall chinooks are found only in the mainstem Hood River and up to Punchbowl Falls near the mouth of the West Fork Hood River.

Spring chinook in the Sandy River basin utilize the mainstem Sandy River and upper basin tributary streams, such as the Salmon River, Zigzag River, Still Creek, and Clear Fork of the Sandy River. They enter these watersheds from April through August and spawn from August through early October. Spring-run chinook salmon in the Sandy River have been influenced by spring-run chinook salmon introduced from the Willamette River ESU. Analyses, however, suggest that considerable genetic integrity still exists in the Sandy River population (Myers et. al 1998).

Fall chinooks in the Sandy River primarily spawn and rear in the mainstem and larger tributaries downstream from the Forest. The fall chinook populations in the Lower Columbia River ESU have a large-scale hatchery component and experience relatively high harvest and extensive habitat degradation. Most fall run fish ESU emigrate to the marine environment as sub-yearlings. Modifications in the river environment have altered the duration of freshwater residence. Tule fall chinook salmon return at adult ages three and four; “bright” fall chinook salmon return at ages four, five, and six.

Lower Columbia River Coho Salmon

Coho stocks occurring on the Forest are currently found in the Sandy and Hood River systems. The indigenous run of coho salmon in the Hood River is at a very low level and may be extinct, but there is some natural reproduction occurring (Rod French, Oregon Department of Fish and Wildlife, personal communication). The coho salmon that do enter the Hood River appear to primarily utilize the mainstem, as well as the lower reaches of the East Fork Hood River.

Spawning occurs mid-September to the end of April with the peak occurring mid-February. Adults prefer deep pools and tributaries for over-wintering, while juveniles will seek out inundated floodplains and other protected slow-water habitats, such as side channels and slow water pools. Woody debris and habitat diversity are important to this species. Primary streams utilized in the Sandy River Basin include the Sandy River, Salmon River, Still Creek, and Zigzag River.

Regional Foresters Special Status Species (Aquatic)

Special Status Species are those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by:

- Significant current or predicted downward trends in population numbers or density.

- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." (FSM 2670.5)

Special Status aquatic species that occur on the Mt. Hood National Forest include:

- Interior Redband Trout *(Oncorhynchus mykiss spp.)*: Interior redband trout occur in the White River basin, but are also believed to be present in both the Fifteenmile Creek and Fivemile Creek fifth-field watersheds.

- Columbia Duskysnail (*Colligyrus sp. nov.1*): This species of aquatic mollusk has been found across the Forest during surveys conducted over the past several years (Mt. Hood National Forest, unpublished data). Habitat requirements for this species are fairly specific: cold well oxygenated springs, seeps, and small streams, preferring areas without aquatic macrophytes. Individuals have not been found in larger streams and rivers, or glacial streams. Surveys for the Columbia duskysnail have been conducted at sites across the Forest for a wide range of projects. This mollusk has been found in many areas across the Forest and is likely to be present in seeps, springs, and smaller streams near and within the project areas in both alternatives II and III.

- Barren Juga (*Juga hemphilli hemphilli*): This species of aquatic mollusk is found in fresh water habitats in small to medium sized highly oxygenated cold water streams at low elevations. The species prefers streams that have moderate velocity level bottoms with stable gravel substrates. The known range of this species is the Columbia River Gorge in Oregon and Washington. They have been found in the Mt. Hood National Forest and the Columbia Gorge National Scenic Area. They are also suspected to occur in the Gifford Pinchot National Forest.

- Purple-lipped Juga (*Juga hemphilli maupinensis*): The Purple-lipped Juga is endemic to Oregon. It is found in large streams at low elevations. These snails prefer riffle habitat with stable gravel substrates, in cold well oxygenated water. It is more tolerant of silt and slack water than other Juga subspecies. The known range of the species is the Lower Deshutes River drainage, below Pelton Dam, and the Warm Springs River in Wasco and Sherman Counties, Oregon. Sites where the species are known to occur are located on the Warm Springs Reservation and Prineville Bureau of Land Management lands in the Deschutes Wild and Scenic River Area.

- Scott's Apatanian Caddisfly *(Allomyia scotti)*: This species of caddisfly inhabits small cold mountain streams. The species has been found in four locations on Mt. Hood: from an alpine stream below Timberline Lodge, the south fork of Iron Creek, from a stream at the junction of Highways 35 and 48, and on a tributary of the Salmon River. The species may occur in other localities on or near Mt. Hood; however extensive surveys have not been conducted.

Surveys for the three special status aquatic mollusks were not conducted as part of this project, even though the Columbia duskysnail is known to occur in many streams on the Forest, including those in the proposed project area of both Alternatives 2 and 3. Instead of conducting surveys in all adjacent streams, species presence is presumed. Riparian reserve standards and guidelines and project design criteria are sufficient to provide for the habitat needs of this species. Anticipated effects of implementing the action alternatives would not significantly affect habitat or species persistence at each site.

Environmental Effects

Alternative 1 – No Action

If Alternative 1 is selected, then there would technically be no effect or impact on any listed, proposed, or special status fish or mollusk species because no federal action would have taken place. However, the no action alternative could have the following consequences:

Fish Passage Barriers - In stream systems that currently have partial or full fish passage barriers due to inadequate stream crossings, fish would continue to have problems moving throughout the stream system. These impediments result in under utilization of spawning and rearing habitats and hinder the broad exchange of genetic material throughout the population. When culverts are too small to accommodate a 100-year flood event, there is the potential for culverts to become plugged, possibly resulting in washout and damage to the aquatic environment. Washouts would introduce a pulse of sediment into the stream system and cause degradation of downstream aquatic habitat.

Roads - Roads that have been damaged by severe storm events can cause resource damage, and can also be unsafe for vehicular traffic. Resource damage is commonly in the form of increased fine and coarse sediment introduction to water bodies. Other sections of road have cracked and failing road fills and has the potential to introduce sediment at some future point by slope failure or surface erosion. Many of the roads in the project area would continue to deteriorate.

Listed fish and their critical habitat, and chinook and coho essential fish habitat, would continue to be negatively affected by sediment and continued loss of habitat connectivity. Special Status species and their habitat would also continue to be negatively affected by sediment and continued loss of habitat connectivity.

Alternative 2 – Proposed Action and Alternative 3

Alternative 2 would treat an additional 2.6 road miles compared to Alternative 3. These additional 2.6 road miles proposed under Alternative 2 would not cross any fish bearing streams, but would treat more roads located in both lake (Laurance Lake) and unnamed stream riparian reserves. The proposed action would only convert about 2.8 miles of road to trails, while Alternative 3 would convert about 4.0 miles of road to trail. In general, both Alternatives 2 and 3 have the same potential to cause a short-term degradation of water quality by increasing sediment delivery to streams. This sediment input may increase turbidity, which in turn, may have an affect on both PETS aquatic species and their habitat and special status species. Because of their common effects determinations, Alternatives 2 and 3 have been grouped together in the discussions below.

Direct Effects

One of the most important aquatic components of watershed restoration is reducing habitat fragmentation by eliminating passage barriers, such as culverts, to aquatic species in a drainage. Culvert removal projects are associated with active road decommissioning projects. These projects involve work in the existing road prism and stream channel. Thus, the potential exists to deliver sediment to streams and create turbidity, particularly where roadwork happens close to and in the streams. In addition to increasing turbidity in streams, the sediment can settle out and cover fish redd substrates and associated aquatic insects and their habitat.

Many projects involve work in or adjacent to an active fish-bearing stream channel. They could deliver sediment, create turbidity, and cause stream bank erosion. The use of heavy mechanized equipment, such as a track hoe or walking excavator, could disturb the stream influence zone, disturb fish, and cause incidental mortality.

Direct effects to fish species resulting from project activities include reduced feeding efficiency during times of increased turbidity and the possibility of individual mortality during construction. Fish rely on sight to feed so feeding success could be hampered during those times turbidity is increased. This would be a short-term effect since turbid conditions would dissipate soon after the in-stream work phase was completed, generally in a few hours.

Any time there is digging or equipment being used in the live stream channel there is a possibility of fish being killed or seriously injured by being crushed or run over by equipment. Based on previous experience with in-stream projects, most fish vacate the area when equipment disturbs the stream channel.

Direct long-term beneficial effects to both PETS fish species and their critical habitat and to special status species would occur from the road decommissioning projects. These projects would not only benefit seasonal fish migration, but they would decrease aquatic habitat fragmentation. Removal of culverts and bridges would allow wood, water, and sediment to move more naturally through these stream and river systems.

Indirect Effects

Indirect effects are possible from increased amounts of fine sediment degrading aquatic habitat after project implementation is completed. Fine sediment sources include material mobilized from the stream channel or erosion of exposed soil during culvert removal. Potential impacts from increased amounts of fine sediments include the degradation of spawning habitat, and the smothering and consequential reduction of aquatic insect production and populations, and thus reduce food availability for fish. Although these processes occur naturally, the changes in channel geometry as a result of restoring stream gradients and exposing stream banks from removing culverts could cause localized areas of erosion until the channel reaches equilibrium at those isolated sites.

The amount of sediment generated from these projects in both Alternatives 2 and 3 is expected to be low due to the time of year when the projects are implemented and the use of project design criteria and best management practices. Once exposed soil areas are re-vegetated and stabilized, erosion would be negligible. Affected areas would be localized and probably extend no further than several hundred feet downstream from the project site. The effects would be relatively short term; as flows in the winter increase, any sediment caused by project activity would be redistributed downstream and in effect diluted as material settles in different areas.

In general, culvert removal would result in short-term input of sediment (immediately and up to 1 to 2 years after project completion) downstream from the project site. Since some of these pipes are on fish-bearing streams, some sediment would be delivered to areas of existing fish habitat.

Mandatory mitigation measures that are focused on reducing sediment production including operating in the low-water season (following ODFW recommended in-water work guidelines, see project design criteria section of this document), use of drainage diversions, sediment filters and timely erosion control applications would reduce the magnitude of short-term water quality effects. Where needed all ground disturbed areas will be planted with native riparian shrubs and trees.

Cumulative Effects

Alternatives 2 and 3 consist of actions that reduce or eliminate negative effects from existing road systems on fish and aquatic resources on the Forest. These activities are designed to restore in-stream, riparian, and upslope environments needed for the recovery of fish habitat.

Road decommissioning would be implemented over multiple years in a number of different watersheds. The recovery from short-term effects from one project may be complete by the time another project in the same watershed is implemented. Cumulative effects from the proposed project are expected to be short-term and undetectable at the watershed scale.

Generally, any cumulative effect on fishery and aquatic resources resulting from project implementation, are similar for all watersheds, and focus around fine sediment input into streams. This sediment can result from construction activities, or occur at a later date, such as from precipitation on disturbed ground prior to vegetation being re-established. Fine sediment produced as a result of these restoration projects, both directly and indirectly, would contribute to the overall sediment load in the watersheds where activities would occur. Adherence to project design criteria and best management practices would minimize any long-term adverse effects of project implementation.

ESA Cumulative Effects

ESA cumulative effects are analyzed under Section 7 of the ESA, requiring consideration of non-Federal projects occurring near the action area. Future federal actions are subject to the consultation requirements established in section 7 of the ESA, and therefore are not considered cumulative in the proposed action.

There are no known significant non-Federal projects occurring near the project area or within the watershed that were available for the analysis of secondary or cumulative impacts. It is anticipated that this project, even in combination with Federal projects, would not have a significant impact on listed, proposed, or candidate species.

Effects Determination to ESA Listed Fish and Their Critical Habitat

The implementation of road decommissioning and culvert removal projects in Alternatives 2 and 3, which occur in a Riparian Reserve warrants a ***May Affect, Likely to Adversely Affect*** **(LAA)** determination for threatened LCR steelhead trout and critical habitat (CH), LCR chinook salmon and CH, LCR coho salmon, CR bull trout, and MCR steelhead trout and CH found in or downstream of the project area due to the probability of take, in terms of harassment and the potential of short-term increases of sediment into the stream channel which these species reproduce, rear or feed.

These projects would be implemented consistent with the species and activity category-appropriate design criteria and conservation measures in Bureau of Land Management/Forest Service Fish Habitat Restoration Activities in Oregon and Washington CY2007-2012 Biological Assessment and associated Biological Opinions: NMFS BO (P/NWR/2006/06532 [BLM]), FWS BO (13420-2007-F-0055).

Effects Determination to Essential Fish Habitat

Essential Fish Habitat (EFH) established under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) includes those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery (i.e., properly functioning habitat conditions necessary for the long-term survival of the species through the full range of environmental variation). EFH includes all streams, lakes, ponds, wetlands, and other water bodies currently, or historically, accessible to salmon in Washington, Oregon, Idaho, and California. Three salmonid species are identified under the MSA: chinook salmon, coho salmon, and Puget Sound pink salmon. Chinook and coho salmon occur on the Forest in the Clackamas River, Hood River, and Sandy River basins.

Implementation of both Alternatives 2 and 3 would warrant a ***Not Adversely Affected*** **(NAA)** determination for chinook and coho salmon essential fish habitat. These projects would not have any negative long-term effect on water or substrate essential to the life history of coho or chinook salmon that occur in the watersheds where project activities would take place.

Effects Determination for Regional Forester's Special Status Species

The implementation of Alternatives 2 and 3, which occur in a Riparian Reserves, warrant a ***May Impact Individuals or Habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species*** **(MIIH)** determination for interior redband trout due to the potential of short-term, non-measurable increases of sediment into the stream channel which these species reproduce, rear or feed.

The effects determination for special status species for both Alternatives 2 and 3 on the Columbia Duskysnail, Barren Juga, Purple-lipped Juga and Scott's Apatanian Caddisfly would be ***May impact individuals or habitat but will not likely contribute to a trend towards federal listing*** **(MIIH)** for culvert removal and decommissioning of roads in the riparian reserve. There would be no impact for road to trail activities and road decommissioning roads outside of riparian reserves.

3.4 Recreation

Affected Environment

Trails in the project area generally meet visual quality Forest Plan Standards. The one exception, however, is the Elk Cove trail in the Upper Middle Fork Hood River Subwatershed. The first mile of this trail is a converted road. No consideration to trail location, design, and visual quality was included in the project which occurred about ten years ago. A relocation of the trail was planned, but not funded. Trail users have expressed displeasure with the road portion and use on the trail has declined.

Numerous summer and winter use trails exist in the proposed subwatersheds. Current access to those trails is adequate. Roads used as winter trails are adequate in most cases, but have been affected by brush encroachment resulting from declining road maintenance budgets.

Environmental Effects

Alternative 1 – No Action

Most existing trails would continue to meet visual quality standards.

There would be no effect specifically to existing summer and winter trails, however declining road maintenance budgets have resulted in many access roads to trailheads becoming brushed in and rough. This trend would most likely continue. Winter trails located on summer roads are also experiencing similar conditions which impede grooming.

Alternative 2 – Proposed Action

It is possible to achieve trail visual quality standard through road to summer trail conversions, however recovery from construction would be needed, and may take five to ten years to occur.

Summer and winter trails affected by road decommissioning have been mitigated though alternative modification after public scoping, and through the project design criteria outlined in Chapter 2. Because several trailhead locations would be relocated, additional mileage would be added to the existing trails. The additional trail distance could enhance recreational experience for some, or could result in some hikers looking for alternative trails with shorter distances.

The difference between this alternative and Alternative 3 is that the access for Bulo Point climbing area would be constructed at a point further away from the rock on the 2730 road, with a trail to the Point. The other difference is that the 2632130 road would be closed, but a turn around put in the road for sled dog trail use.

The effects on dispersed and developed recreation in each subwatershed would be very similar, mostly reducing roaded recreation types of dispersed use such as berry harvesting, mushroom picking, firewood gathering, road based hunting, and dispersed vehicle camping. By reducing the road density, the opportunities for this type of road-based recreation would be reduced. Conversely, however, the opportunities for non-road based recreation such as hiking and

backcountry hunting would be increased. The Forest has many miles of roads so ample roaded opportunities for recreation would still exist even if all these roads are closed.
There are no known cumulative effects to existing trails, visual quality of trails, or roaded recreation types of dispersed use in this alternative.

<u>Alternative 3</u>

It is possible to achieve trail visual quality standard through road to summer trail conversions, however recovery from construction would be needed and may take five to ten years to occur.

Summer and winter trails affected by road decommissioning have been mitigated though alternative modification after public scoping, and through the project design criteria outlined in Chapter 2. The difference between this alternative and Alternative 2 is that the access for Bulo Point climbing area would be constructed by the northern portion of road 2730240, with a parking area and a short trail to the Point. The other difference is that the 2632130 road would not be closed, and would continue to be available for sled dog trail use.

The effects on dispersed and developed recreation in each subwatershed would be very similar, mostly reducing roaded recreation types of dispersed use such as berry harvesting, mushroom picking, firewood gathering, road based hunting, and dispersed vehicle camping. By reducing the road density, the opportunities for this type of road-based recreation would be reduced. Conversely, however, the opportunities for non-road based recreation such as hiking and backcountry hunting would be increased. The Forest has many miles of roads so ample roaded opportunities for recreation would still exist even if all these roads are closed.

There are no known cumulative effects to existing trails, visual quality of trails, or roaded recreation types of dispersed use in this alternative.

3.5 Wild and Scenic River

Affected Environment

The Salmon River became a Wild and Scenic River through the Omnibus Oregon Wild and Scenic Rivers Act of 1988. The Salmon Wild and Scenic River system is 33.5 miles in length with the upper 25.5 miles managed by the Forest Service and the lower 8.0 miles managed by the Bureau of Land Management. For the section of the river managed by the Mt. Hood National Forest, the designation extends from its headwaters to just above Cheeney Creek (see the *Salmon National Wild and Scenic River Management Plan* (USDA 1993) for a detailed boundary description).

Road decommissioning activities for approximately 4.7 miles in the Upper Salmon River Subwatershed are proposed within the Salmon Wild and Scenic River corridor. The roads affected are displayed in Table 3.12.

Table 3.12. Roads proposed for decommissioning that are within the Salmon Wild and Scenic River Corridor.

Road Number	Legal Description
5800242	T4S, R9E, Section 18
2600220	T4S, R9E, Section 7

Road Number	Legal Description
2653130	T4S, R9E, Section 6
2653131	T4S, R9E, Section 6
2600011	T3S, R9E, Section 31
3500120	T3S, R9E, Section 19
2600197	T3S, R9E, Section 19
2600226	T3S, R9E, Section 19

The affected roads are located in Segments 1 and 2, which are described below:

- Segment 1: The 11.3-km (7-mi) segment from the headwaters to the south boundary line of Section 6, Township 4 S, and Range 5 E is classified as a *Recreational River*.

- Segment 2: The 24.1-km (15-mi) segment from the south boundary line of Section 6, Township 4 S, and Range 9 E to the confluence with the South Fork of the Salmon River is classified as a *Wild River*.

Outstandingly Remarkable Values

The Salmon Wild and Scenic River system is managed to protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values for which the river was designated, while providing for public recreation and resource uses that do not adversely impact or degrade those values. The outstandingly remarkable values are discussed briefly below (see the *Salmon National Wild and Scenic River Management Plan* (USDA 1993) for a more detailed description).

Scenery

The upper river corridor includes impressive close-up views of Mt. Hood. In river segment 2, the river flows through a narrow river canyon with basalt cliffs on both sides of the river as well as a series of six waterfalls. The visual diversity provided by these features qualifies scenery as an outstandingly remarkable value.

Recreation

The Salmon River provides a wide variety of recreational opportunities along its length ranging from hiking, sportfishing, nordic and alpine skiing, and camping to the use of highly developed resort facilities along the river. It is this wide variety of high quality recreational opportunities that makes recreation an outstandingly remarkable value.

Fisheries

The Salmon River provides extremely important and productive anadromous fish spawning and rearing habitat (see the *Fisheries* section of the EA and Fisheries Biological Evaluation in the project record). For these reasons, fisheries values were found to be outstandingly remarkable.

Wildlife

The entire river provides important wildlife habitat in terms of optimal summer and winter range for big game species (see the *Wildlife* section of the EA and the Wildlife Biological Evaluation in the project record). The uniqueness of the upper meadow complexes and the diversity they provide for wildlife including the presence of big game herds from both the east and west side of the Cascades, as well as the diversity of wildlife species found elsewhere along the river make this value outstandingly remarkable.

Hydrology

The presence of six waterfalls in a three mile segment is truly a unique feature of the Salmon River. These features, as well as the high quality of water found in the river, make the hydrologic values outstandingly remarkable.

Botany/Ecology

The Red Top/Salmon River meadows complex is an area along the Salmon River of great ecological diversity and productivity, which are found to be outstandingly remarkable.

Environmental Effects

Refer to the earlier discussion of effects of implementing alternatives 2 and 3 in the *Hydrology* and *Fisheries* sections for additional effects disclosure.

Section 7 of the Act provides the authority to the Secretary of Agriculture to evaluate and make a determination on water resources projects that affect wild and scenic rivers. The authority for that determination for projects on National Forest System lands is delegated to the Forest Supervisor (FSM 2350).

Section 7(a) Determination

A Section 7(a) determination has been completed and is included in this EA as Appendix C. The determination found that the proposed project (Alternative 2 – Proposed Action and Alternative 3) would not have an adverse effect on the free-flowing condition, water quality, or the values for which the river was designated.

Alternative 1 – No Action

If no roads are decommissioned, then the existing condition would remain as is. There would be no effects to scenery, recreation, or botany. As discussed in the *Hydrology* and *Fisheries* sections, implementing the No Action Alternative would continue to result in road-related sediment delivery to the Salmon River. As discussed in the *Wildlife* section, there would be no reduction in road density or improvements to habitat from reduced harassment.

Alternative 2 – Proposed Action and Alternative 3

The roads proposed for decommissioning within the Salmon Wild and Scenic River Corridor are the same for both Alternative 2 and 3; therefore, the effects in the Salmon River Subwatershed are expected to be the same. If Alternatives 2 or 3 are implemented, there would not be an adverse effect on the free-flowing condition, water quality, or the values for which the river was designated (see *Section 7(a) Determination*, Appendix C).

3.6 Wildlife

Management Indicator Species (MIS) for the Forest include northern spotted owl, pileated woodpecker, pine marten, deer, elk, and wild turkey. The effects to each MIS are discussed below.

Northern Spotted Owl (Threatened)

<u>Habitat Characteristics</u>

Habitat for the owl is defined as either suitable or dispersal habitat. Suitable habitat for the northern spotted owl consists of habitat used by owls for nesting, roosting, and foraging (NRF). Generally suitable habitat is 80 years of age or older, the canopy cover exceeds 60 percent, is multi-storied and has sufficient snags and down wood to provide opportunities for NRF. Dispersal habitat for the owl usually consists of mid-seral stage stands between 40 and 80 years of age with a canopy closure of 40 percent or greater and an average diameter of 11 inches. Spotted owls use dispersal habitat to move between blocks of suitable habitat; juveniles use it to disperse from natal territories. Dispersal habitat may have roosting and foraging components, enabling spotted owls to survive, but lack structure suitable for nesting. Owls can also disperse through suitable (NRF) habitat.

<u>Analysis Areas</u>

The project proposal does not involve the removal of suitable habitat or dispersal habitat for spotted owls. There are five known owl site locations and no predicted sites within a quarter of a mile of the roads that would be decommissioned.

Out of the five historical pairs' home range circles, there are currently no owls within the distance that could cause incidental "take" based on the noise thresholds that are accepted by the Willamette Province Level One Team and concurred with by the Department of Interior, U.S. Fish and Wildlife Service.

Direct and Indirect Effects – Northern Spotted Owl

<u>Alternative 1 – No Action</u>

No short-term effects to the spotted owl would be predicted with this alternative. The spotted owl habitat present in the project area would continue to function as spotted owl habitat. However, many parts of the project area and the surrounding area are currently in an area prone to a wildfire outbreak. A high fire hazard situation exists in some of these watersheds. Maintaining these roads and not decommissioning them would allow the roads to be used to anchor fires and act as fuel breaks. This alternative would improve the response time to fires by having more roads and increase anchor points for burnouts and tying in fire lines. Consequently, this alternative would serve to reduce the size and magnitude of future fires and could potentially protect spotted owl habitat.

With no action there would be no change in noise related disturbance to owls because the owl nest sites are beyond the distance thresholds for spotted owl disruption or harassment.

<u>Alternative 2 – Proposed Action and Alternative 3</u>

Effects to Owl Habitat on a Stand Scale

The proposed action includes decommissioning 84 miles of roads and Alternative 3 would decommission 81 miles of roads. This action has both positive and negative effects on the spotted owl and its habitat. The positive effect is that in the long term the road would once again become a part of the forest habitat and provide more forested land and could potentially produce more prey than the roaded habitat. On the negative side, by decommissioning the roads, this alternative would reduce the ability to stop or slow down large catastrophic fires.

A high fire hazard situation exists in some of these watersheds. By decommissioning these roads there would be a reduction of roads that could be used to anchor fires and act as fuel breaks. This alternative would reduce the response time to fires by having less roads and increase anchor points for burnouts and tying in fire lines. Consequently, this alternative would serve to increase the size and magnitude of a future fire and reduce protection of spotted owl habitat.

The chance that a fire would quickly become a crown fire with high flame lengths would be increased by this alternative. The potential exists that a wildfire would burn an unknown amount of land within currently suitable habitat for spotted owls. A wildfire could potentially burn through these areas, effectively reducing an unknown amount of suitable spotted owl habitat to non-habitat. A wildfire has the potential to remove the nest site by consumption of the nest tree, or by removing enough of the available suitable habitat in the core area or home range of the nests to render the nest site un-usable by the spotted owl pair. The wildfire would likely occur after the breeding period for owls. This reduction in suitable habitat, depending on the amount, could have substantial negative effects to the spotted owl population residing in the area.

There would be no decline of the spotted owl that has been linked to the removal and degradation of available suitable habitat. Because the loss of habitat from a large fire is only hypothetical, there is no adverse affects to the spotted owl or its habitat from habitat alteration or removal. Therefore, the effects determination for this project is ***No Effect*** to the spotted owl or its habitat.

Effects to the Spotted Owl Dispersal Area of Concern

There is no habitat removal in the spotted owl Dispersal Area of Concern.

Effects Due to Noise Disturbance

There is no evidence that noise or human presence has a negative affect on spotted owl survival or reproduction. A number of studies on the effects of noise disturbance on the Mexican spotted owl have not shown any loss of reproduction. However, the Willamette Province Level One Team and the US Fish and Wildlife Service have chosen to be conservative in the effects determination of noise when it is related to spotted owls based on negative effects experience by some other more noise sensitive species.

Project activities that generate noise above the local ambient levels are heavy equipment and chainsaw use. Disruption distances of 35 yards for heavy equipment use and 65 yards for chainsaw use have had concurrence by the Willamette Province Level One Team and the U.S. Fish and Wildlife Service. If project implementation occurred during the critical breeding period for the spotted owl (March 1 – July 15th) within this distance of one of the historic owl nest sites near the project site, disturbances would be generated that may adversely affect the breeding of the spotted owl. However, none of the historic activity centers occurs within these distances. There are five spotted owl historic activity centers that are within a quarter mile of the roads proposed for decommissioning. As a result, the disturbance effects call for the proposed project is ***May Affect, But Not Likely to Adversely Affect***.

Effects to Spotted Owl Habitat within Critical Habitat

There are no effects to critical habitat from this project.

Cumulative Effects – Northern Spotted Owl

A cumulative effects analysis has been conducted for spotted owls within the historic owl activity center analysis areas to determine if there is a meaningful change in both suitable and dispersal habitat. Road decommissioning would not alter spotted owl habitat to a degree that there are any negative effects to spotted owls from the action itself. There is an increased risk from large wildfires but this is due to natural causes and is only increased slightly by the decrease in the road network. Thus, there are no cumulative effects anticipated from this project.

Endangered Species Act Compliance

Informal consultation is required for this project. This project is consistent with the Letter of Concurrence from the US Fish and Wildlife Service, subject: Informal programmatic consultation for activities with the potential to disturb spotted owls (Strix occidentalis caurina) within the Willamette Planning Province for FY 2008-2009 (13420-2007-I-0223).

Pileated Woodpecker & Pine Marten

The pileated woodpecker was chosen as an MIS because of its need for large snags, large amounts of down woody material, and large defective trees for nesting, roosting and foraging. The pine marten is an indicator species to mature or older forests with dead and defective standing and down woody material. It has a feeding area that utilizes several stand conditions that range from poles to old growth.

Direct and Indirect Effects – Pileated Woodpecker & Pine Marten

Alternative 1 – No Action

With no action there would be no noise related disturbances to these species.

Alternative 2 – Proposed Action and Alternative 3

Some hazard trees that pose a safety risk may be felled, which could result in a direct impact to the pileated woodpecker and pine marten. However, this impact would not adversely affect their populations or habitats.

However, many parts of the project area and the surrounding area are currently in an area prone to a wildfire outbreak. A high fire hazard situation exists in this much of the project area.

By not removing the roads that act as a fuel break as proposed, the size and magnitude of a future marten and pileated woodpecker habitat could be reduced if a fire starts in the area. The fire may quickly become a crown fire with high flame lengths. The potential exists that a wildfire would burn an unknown amount of land within currently suitable habitat for the pine marten and pileated woodpecker. A wildfire could potentially burn through this area, effectively reducing an unknown amount of habitat for these species. The wildfire could occur during the breeding season for these species. This reduction in suitable habitat, depending on the amount, could have negative effects on the pine marten and pileated woodpecker populations residing in the area.

Cumulative Effects – Pileated Woodpecker & Pine Marten

Road decommissioning would not alter pileated woodpecker or pine marten habitat to a degree that there are any negative effects to either species from the action itself. There is an increased risk from large wildfires but this is due to natural causes and is only increased slightly by the decrease in the road network. Thus, there are no cumulative effects anticipated from this project.

Deer and Elk

High road densities lead to harassment of elk herds. Harassed elk move more often than elk left alone and use of habitat decreases as road density increases (Witmer 1985). The study mentioned above also reported that elk within or moving through areas of high open-road densities moved longer distances; several miles per day was not uncommon.

Direct and Indirect Effects – Deer and Elk

Alternative 1 – No Action

With no action there would be no reduction in road density or improvements to habitat from reduced harassment.

Alternative 2 – Proposed Action and Alternative 3

The proposed decommissioning of roads would reduce the road density and improve utilization of deer and elk habitat due to the reduced harassment. The Forest Plan states that motorized vehicle traffic should be reduced to not exceed 2.0 miles per square mile within inventoried deer and elk winter range and 2.5 mile per square mile within inventoried deer and elk summer range (i.e., outside of inventoried winter range) (FW-209 and FW-210). Road densities following the decommissioning would be within the Forest Plan standards for both winter and summer range for deer and elk (Table 3.13). This would help improve the utilization of these habitats by reducing the harassment of these animals.

Table 3.13. Road densities (miles of road per square mile).

Subwatershed	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Headwaters Fifteenmile Creek	2.3	1.5	1.7
Linney Creek	2.0	0.9	0.9
Lower Salmon River	0.2	0.2	0.2
Still Creek	1.2	1.0	1.0
Upper Eightmile	2.3	1.8	1.9
Upper Fifteenmile Creek	3.0	1.8	1.8
Upper Middle Fork Hood River	1.0	0.2	0.3
Upper Salmon River	2.1	1.8	1.8

If a large wildfire grew in size due to the reduced ability to control the wildfire, then there would be an increase in forage and a resulting expansion in the elk population.

Cumulative Effects – Deer and Elk

Road decommissioning would not alter deer and elk habitat to a degree that there are any negative effects to either species from the action itself. There is an increased risk from large wildfires but this is due to natural causes and is only increased slightly by the decrease in the road network. Thus, there are no cumulative effects anticipated from this project.

Wild Turkey

Wild turkeys were selected as a Management Indicator Species because of their economic status as a game bird and because of their use of pine/oak habitats. They are an early successional species and although they utilize oak woodlands they depend on having openings for nesting and foraging. Wild turkeys are only found on the eastside of the Cascades on the Forest.

Wild turkeys use roads and road edges for feeding, nesting, and traveling. Turkey hunters also use roads to locate and hunt turkeys during the hunting season. Decommissioning of roads would not have any significant effect on turkey production, but would have a detrimental effect on the opportunities to hunt turkeys effectively. There would be a small effect reducing foraging areas for turkeys.

Direct and Indirect Effects –Wild Turkey

Alternative 1 – No Action

If no roads were decommissioned there would be no change for wild turkeys and they would continue to forage, nest, and travel using roads. Hunters would continue to find opportunities to hunt turkeys by driving roads, listening to turkeys gobble, and walking to a place to hunt them. The population of turkeys would remain stable because turkey population numbers are at carrying capacity since only male turkeys are harvested in Oregon.

Alternative 2 – Proposed Action and Alternative 3

The population would remain unchanged if roads are decommissioned. The amount of area that turkeys forage along roads is not significant enough to cause a large population shift. An increase in fire severity would create more open habitat that would replace the roadside habitats. If the increase in fire severity and reduction in suppression ability allows the loss of oak habitat, then there could be some reduction in wild turkey numbers.

Less drivable roads would decrease turkey hunting opportunities for many hunters since the number one way of hunting turkeys is to drive roads, stop and call, and then proceed with the hunt. Because wild turkeys were selected as MIS species due to their importance as a game bird, it is important to point out that these alternatives would reduce the availability of some turkeys to hunters.

Cumulative Effects –Wild Turkey

Wild fires, insects, and disease have all improved habitat for the wild turkeys. Thinning forest stands also can improve wild turkey habitat providing increased forage and nest habitat. Road closures for big game habitat improvement have reduced the amount of hunting areas where turkeys can be harvested by the average hunter. There is no effect on the overall population by other road closures, but it does reduce the harvest of these game birds.

Land Birds

Approximately 170 species of birds occur on the Forest. A small number of these species are likely present within the project area during the breeding season. Some species favor habitat with late-successional characteristics while others favor early-successional habitat with large trees. Birds do not use roads as habitat in general although some species will roost on roads or will gather gravel from the road surface. The gallinaceous birds and birds in the dove family are known to utilize roads for this purpose.

Direct and Indirect Effects – Land Birds

Alternative 1 – No Action

There would be no change in the habitat for land birds if no roads were decommissioned. Roads are a minor effect to bird species in general. Roads act like gaps in the forest and provide some edge effect. Edge effect can be both beneficial and detrimental to birds. The edge effect can provide improved foraging opportunities and can increase species richness but it can also introduce an increase in predation and nest parasitism.

Alternative 2 – Proposed Action and Alternative 3

Decommissioning of roads would not alter the habitat for migratory birds. There would be no negative effects to species that prefer late-seral habitats. There may be a reduction in areas for birds to gather grit from the road surface but this is minor. The effect would mostly be to grouse, quail, doves, and pigeons. But there are many places for these species to find grit so it is not a limiting factor.

Increased risk from large fires by reducing road densities would have a short-term negative effect on the production of some species in the year of the fire, but in the long term some species that require early seral habitats would increase while late seral species would decline. Some species would benefit from the increase in snag numbers from the fire.

Decommissioning of roads would allow for this habitat to eventually fill in the gap and decrease the edge effect. This may decrease species richness and foraging opportunity for some species but it would reduce nest parasitism and predation that comes with the edge effect.

Cumulative Effects – Land Birds

Road decommissioning would not alter land birds' habitat to a degree that there are any negative effects to the birds from the action itself. There is an increased risk from large wildfires but this is due to natural causes and is only increased slightly by the decrease in the road network. Thus, there are no cumulative effects anticipated from this project.

Effects to Special Status Species

The following table summarizes effects to Sensitive Species.

Table 3.14. Sensitive species.

Species	Suitable Habitat Presence	Impact of Action Alternatives*
Johnson’s Hairstreak (Callophrys Johnsoni)	No	No Impact
Mardon Skipper (Polites mardon)	No	No Impact
Oregon Slender Salamander (Batrachoseps wrightii)	No	No Impact
Larch Mountain Salamander (Plethodon larselli)	No	No Impact
Cope’s Giant Salamander (Dicamptodon copei)	Yes	MII-NLFL
Oregon Spotted Frog (Rana pretiosa)	No	No Impact
Bald Eagle (Haliaeetus Leucocephalus)	No	No Impact
White-headed Woodpecker (Picoides albolarvatus)	No	No Impact
Bufflehead (Bucephala albeola)	No	No Impact
Harlequin Duck (Histrionicus histrionicus)	No	No Impact
American Peregrine Falcon (Falco peregrinus anatum)	No	No Impact
Lewis’ Woodpecker (Melanerpes Lewis)	No	No Impact
Townsend’s Big-eared bat (Corynorhinus townsendii)	No	No Impact
Fringed Myotis (Myotis thysanodes)	No	No Impact
California Wolverine (Gulo gulo luteus)	No	No Impact
Puget Oregonian (Cryptomastix devia)**	No	No Impact
Columbia Oregonian (Cryptomastix hendersoni)**	No	No Impact
Evening Fieldslug (Deroceras hesperium)**	No	No Impact
Dalles Sideband (Monadenia fidelis minor)**	No	No Impact
Crater Lake Tightcoil (Pristiloma arcticum crateris) **	No	No Impact

* “MII-NLFL” = May Impact Individuals, but not likely to Cause a Trend to Federal Listing or Loss of Viability to the Species

Effects to the species listed above include changes to habitat as well as potential harm to individuals caused by physical impacts of noise, fuels treatment, invasive plant treatment or prevention, road reconstruction/repair/decommissioning, and culvert removal or alteration.

The following sensitive species are discussed in more detail below:

- Terrestrial Mollusks: The Puget Oregonian, Columbia Oregonian, evening fieldslug, the Dalles sideband and Crater Lake tightcoil are the mollusk species with ranges that include the project area. No surveys are required for these species due to lack of impacts to habitat.

- Larch Mountain Salamander: Only a portion of the project occurs within the range of this species. No surveys needed due to lack of impact to habitat.

- Cope's Giant Salamander: Culvert removal may temporarily displace some of these salamanders but there is no significant impact expected for this species.

Effects of Other Rare or Uncommon Species

Habitat for the red-tree vole consists of conifer forests containing Douglas-fir, grand fir, Sitka spruce, western hemlock, and white fir. Optimal habitat for the species occurs in old-growth Douglas-fir forests. Large, live old-growth trees appear to be the most important habitat component. Although part of the project area does contain mature old-growth stands, there would be no indirect, direct, or cumulative effects to red-tree vole habitat.

Northwest Forest Plan Wildlife Requirements

The white-headed woodpecker, black-backed woodpecker, pigmy nuthatch, flammulated and great gray owls, Canada lynx and bats are species with standards and guidelines within the Northwest Forest Plan. These species are discussed below:

- White-headed woodpecker, pigmy nuthatch, and flammulated owl: These three species are found generally in mature ponderosa pine habitat on the east side of the Cascades. The project activities would not impact any ponderosa pine trees. There would be no habitat alteration in the project area for these species; therefore, the standards and guidelines and management recommendations for these species do not apply.

- Black-backed woodpecker: Habitat for this species is found in mixed conifer and lodgepole pine stands in the higher elevations of the Cascade Range. The project area has potential habitat for the species. However, there would be no habitat alteration in the project area for this species; therefore, the standards and guidelines and management recommendations for these species do not apply.

- Great gray owl: There may be potential habitat for the great gray owl directly adjacent to a road proposed for decommissioning. The project is would not alter habitat. Any road that crosses within 100 yards of a meadow would have a seasonal restriction from February 15 to June 30 to avoid disturbance for this species.

- Canada lynx: This species is federally listed as threatened but is not known or suspected to occur on the Mt. Hood National Forest. Because there is no suitable habitat for this species within the project area, the standards and guidelines do not apply.

- Bats: The Northwest Forest Plan provides additional protection for caves, mines, abandoned wooden bridges and buildings that are being used as roost sites for bats. Before a wooden bridge is removed, the bridge would be assessed for bat habitat. If bats are found to be using the bridge, then additional bat roosting habitat (e.g., bat boxes or snags) would be provided in the vicinity of the bridge.

Snags and Down Wood

No snags or down wood would be removed as a result of implementation of this project. If a snag must be removed because of a hazard to workers during implementation, then a snag would be created within the area to replace it.

3.7 Botany

Affected Environment

The project area is almost entirely composed of road bed and the adjacent road prism. The project area only consists of one sensitive plant, *Arabis sparsiflora var. atrorubens*. A second plant, *Delphinium nuttallii*, has been documented in the Oregon Heritage Program for the project area, but a field visit found the common species *Delphinium nuttallianum* to be abundant. There are no rare or uncommon species documented as present or suspected in the project area.

Environmental Effects of Alternatives 2 and 3 – Proposed, endangered, threatened and sensitive vascular plant, bryophyte, lichen and fungi species

Because the project is almost entirely restricted to the already disturbed road bed and prism general botany field reconnaissance was deemed unnecessary and not conducted. A specific visit was made on June 18, 2008 to the section of Forest Road 2730-240 in the Headwaters Fifteenmile Subwatershed where there was a report of sensitive plant *Delphinium nuttalii*. Since the habitat was not a good match for the species and since *Delphinium nuttallianum,* a common species that is easily confused with the rare species, is abundant in the area the report was suspect. Only the common species was found. If the rare species is present it would still be outside the area of any likely disturbance.

Arabis sparsiflora var. atrorubens was documented adjacent to Forest Road 4460-140 in the Upper Eightmile Creek Subwatershed. The road is proposed for decommissioning. The project should have no impact on the population since it is unlikely there will be any road deconstruction or other ground disturbance at that site as a result of this project. No other species were documented or suspected to occur close enough to the project activities and disturbance to be affected.

Except for *Bridgeoporus nobilissimus*, surveys to detect the presence of PETS fungi are not considered practical because of the variability in fruiting-body (mushroom, truffle) production from year to year of most fungi, necessitating multiyear surveys to detect a species' presence. In general, roadbeds and prisms are unsuitable habitat for these species.

Because there are no impacts to PETS species, there are no cumulative impacts to any proposed, endangered, threatened and sensitive vascular plant, bryophyte, lichen and fungi species.

Environmental Effects of Alternatives 2 and 3 – Invasive Plants

In general, decommissioning roads can reduce the spread of weeds that are spread primarily by vehicles. However, the project's activities would not reduce spread of weeds by natural vectors, such as wind or animals. With decommissioning roads on the Forest, new sites would be harder to detect when access is reduced and treatment would either be more expensive or left untreated due to expense and or logistics.

Decommissioning roads would have some impact on the forest-wide invasive plants program. Most obvious would be the effects of soil disturbance in pulling culverts or other road improvements that would provide opportunities for weeds to establish. The less obvious problem is that some roads are currently being treated or will be treated in the future. All treatment sites require motorized access to at least get reasonably close. Most roadside weeds are treated by some sort of motorized spraying system whether it is boom or nozzle. The vehicle may be a spray truck or an ATV. If the road cannot reasonably be traveled, then treatment would probably not occur due to both economics and difficulty of access. Table 3.15 shows the conflicts that were found.

Table 3.15. Road Decommissioning conflicts with invasive plants planned treatment.

District	Comment	Road
Barlow	Road shoulder is treatment site	2730-160
Barlow	Road shoulder is treatment site	4421-000
Barlow	Road shoulder is treatment site	4440-161
Hood River	Road shoulder is treatment site and access to other site	2840-000
Hood River	Road shoulder is treatment site	2840-650
Hood River	Access to a site	2840-640

The main idea is to treat invasive plants on the roads listed above before closing a road when reasonable access is lost. Following the botany project design criteria outlined in Chapter 2 would mitigate these impacts.

3.8 Heritage Resources

The National Historic Preservation Act and the National Environmental Protection Act both require consideration be given to the potential effect of federal undertakings on historic resources, (including historic and prehistoric cultural resource sites). The guidelines for assessing effects and for consultation are provided in 36 CFR 800. To implement these guidelines, in 2004, Region 6 of the Forest Service entered a Programmatic Agreement (PA) with the Oregon State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP). In accordance with this agreement, the proposed activities were considered on a case-by-case basis and separated into one of two categories: 1) Activities considered to have little or no potential to affect historic properties and are excluded from review; and 2) Activities requiring a survey or inspection.

Environmental Effects

Alternative 1 – No Action

All of the roads considered for analysis would remain in their existing condition under this alternative. Heritage resources would only be affected by decay and other natural forces that are already occurring. This alternative would have no effect on heritage resources.

Alternative 2 – Proposed Action

In accordance with the 2004 agreement between Region 6 of the Forest Service, Oregon State Historic Presentation and the Advisory Council on Historic Preservation, the projects have limited potential to affect archaeological properties (Stipulation III.b(5); *Road decommissioning including ripping, culvert removal, out sloping, water barring, stabilization (following analysis) potentially unstable fills, and seeding and planting native vegetation, and mulching, if needed.*) and is exempt from case-by-case review in accordance with the 2004 Programmatic Agreement. However, activities occurring within native surfaced roads or outside of previously disturbed ground have some potential to affect archaeological properties and require inspection surveys.

The proposed projects were separated into activities for which no survey is required, and activities requiring surveys. If previous surveys were determined to comply with the 2004 agreement, a resurvey of the area is not required.

Actions not requiring surveys include road decommissioning activities within areas defined as having a low potential for the presence of archaeological properties, passive decommissioning consisting of barricades and natural revegetation, and activities occurring within roads with thick aggregate surfaces. Actions requiring surveys include road decommissioning activities within native surfaced roads, road decommissioning activities within previously documented archaeological sites, and culvert removals where heavy machinery may enter undisturbed ground. All of the native surfaced roads situated in areas with a high likelihood for the presence of archaeological sites scheduled for passive decommissioning would have the first 300 feet actively disturbed and also require surveys.

For this particular project, it was determined that surveys or inspections were required for culvert locations situated in areas with a high likelihood for the presence of archaeological sites, for the first 300 feet of native roads scheduled for passive decommissioning also situated in areas with a high likelihood for the presence of archaeological sites (Forest Roads 4421190 and 2840640), and for the following roads: 2730240, 4421000, 4450200, 2840000, 2840630, 2840660, 4440140, 4460000, 2730132, 2730130, 2656053, 2656064, 2656074, 2656099, 2656124, 2656130, 5800223, 2612021, and 2612022. All of the surveys proved negative for the presence of archaeological properties.

However, there are several previously documented archaeological properties near roads scheduled for decommissioning, which are discussed below:

- Archaeological site 669EA073 and isolate 669IS234 were found to lie outside of any areas of potential effect. No additional protective measures are required concerning these archaeological properties.

- The Murray Ditch 661EA0142 has been determined ineligible for inclusion on the National Register of Historic Places; no protective measures are required or recommended for ineligible sites.

- Archaeological sites 661EA0229, 661EA0027, 661EA0053 and 661EA0065 were found to lie outside of any areas of potential effect. No additional protective measures are required concerning these archaeological properties.

- Forest Road 2840620 crosses the Coe Creek Ditch 666EA0208 in two locations; however, the road is scheduled for passive decommissioning. Therefore, no ground disturbance is proposed in the vicinity of either ditch crossing.

- Forest Road 2656035 is situated in an area that has multiple sites (669EA103, 669EA104, and 669EA071). Although it is scheduled for passive decommissioning, heritage concerns with this area are high. The boundaries of the sites would be flagged as a boundary for the exclusion of heavy machinery and ground disturbance. Above-ground barricades could be utilized for no effect on the sites.

- Forest Road 2730160 is proposed for active decommissioning and passes through archaeological sites 661EA0025 and 661NA0262. The boundaries of the sites would be flagged as a boundary for the exclusion of heavy machinery and ground disturbance. Above-ground barricades could be utilized for no effect on the sites.

- Forest Road 4450200 is proposed for active decommissioning and passes through lithic isolate 661IS0037. Active decommissioning would be limited to the first 100 feet of the road, outside of the boundaries of 661IS0037 for no effect on the site.

In the event that archaeological properties are located during decommissioning activities, all work in the vicinity of the find will cease and a District or Forest archaeologist will be contacted.

With the recommended mitigation measures, the Alternative 2 could proceed with no effect to heritage resources.

<u>Alternative 3</u>

Approximately 2.6 fewer miles of road would be decommissioned under this alternative. The anticipated impacts to heritage resources would remain the same under this alternative as they do for Alternative 2. With the recommended mitigation measures (as stated above and in the *Project Design Criteria* section), Alternative 3 would have no effect to heritage resources.

3.9 Transportation Costs

Alternative 1 – No Action

Selecting the No Action Alternative would mean no road decommissioning activities would be completed. The roads would remain as they currently are on the landscape. The present level of road maintenance funding would continue to be inadequate to cover all of the road maintenance needs in the priority watersheds.

Alternative 2 – Proposed Action

Currently, the 84 miles of roads proposed to decommission in this alternative cost approximately $92,000[2] to maintain *annually*.

The estimated costs for implementing Alternative 2 (i.e., decommissioning 84 miles of road) would be approximately $1,000,000[3].

Alternative 3

Currently, the 81 miles of roads proposed to decommission is this alternative cost approximately $88,000[2] to maintain *annually*.

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[2] This amount is based on the Forest's calculated average road maintenance cost of $1,100 per mile per year.
[3] This amount is based on decommissioning activities occurring in the Bull Run Watershed on the Forest (during 2008).

The estimated costs for implementing Alternative 3 (i.e., decommissioning 81 miles of road) would be approximately $900,000[3].

If 81 miles of road are decommissioned, then the cost to maintain all of the remaining roads in the priority subwatersheds would be $1,436,340.73 (as compared to $1,525,333.00 in Alternative 1).

3.10 Wilderness and Inventoried Roadless Areas

All of the road decommissioning activities would occur within or very close to existing road prisms. The project is not located within Congressionally-designated Wilderness and Inventoried Roadless Areas.

One road, however, is located directly adjacent to an Inventoried Roadless Area (IRA). This road is Forest Road 2600011 in the Upper Salmon River Subwatershed, which is adjacent to the Twin Lakes IRA. Road decommissioning activities would not take place within the IRA. Therefore, there would be no direct, indirect, or cumulative adverse effects on the roadless area or its roadless character if any of the alternatives were implemented, including no action. Rather, decommissioning this road would enhance the roadless nature of this area.

3.11 Other Required Disclosures

Floodplains and Wetlands

There would be no impacts to floodplains or wetlands from this project. The Oregon Department of Lands and the US Army Corps of Engineers would be notified and provided necessary information about this project related to dredging and filling at stream crossings (Section 404, Clean Water Act).

Air Quality

No burning is planned for this project, so there would be no impacts on visibility from smoke. Any dust from proposed decommissioning activities would be short-term in duration and very site-specific for each road. There would be no effects past the decommissioning phase. No cumulative effects would be expected.

Consumers, Civil Rights, Minority Groups, Women, and Environmental Justice

Executive Order No. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs Federal agencies to address effects accruing in a disproportionate way to minority and low income populations. No disproportionate impacts to consumers, civil rights, minority groups, and women are expected from the action alternatives. Decommissioning work would be implemented by contracts with private businesses. Project contracting for the project's activities would use approved management direction to protect the rights of these private companies.

Treaty Resources and Reserved Indian Rights

No impacts on American Indian social, economic, or subsistence rights are anticipated. No impacts are anticipated related to the American Indian Religious Freedom Act. The

Confederated Tribe of Warm Springs was contacted in reference to this Proposed Action (see Chapter 1, Public Involvement).

Prime Farmlands, Rangelands, and Forestlands

None of the alternatives would have an adverse impact to the productivity of farmland, rangeland, or forestland.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that are forever lost and cannot be reversed. Irretrievable commitments of resources are considered to be those that are lost for a period of time and, in time, can be replaced. The alternatives would not result in any irreversible or irretrievable commitments of resources.

4.0. List of Preparers

Team Member	Education and Experience	Contribution
John Dodd	B.S. in Soil Science, Land Use Emphasis. Soil scientist with the Forest Service since 1988.	Soils
Mike Dryden	B.S. in Anthropology. Archeologist with the Forest Service since 1984.	Heritage Resources
Alan Dyck	B.S. in Wildlife Management. Wildlife Biologist with the federal government for 26 years.	Wildlife
Serena Helvey	A.A.S. in Civil Engineering and A.A.S. in Forestry, Certificate in Natural Resources. Technician with the Forest Service since 2003.	Engineering
Lance Holmberg	B.S. in Natural Resources. M.A. in Biology. Botanist with the Forest Service for 16 years.	Botany; Invasive Plants
Jeff Jaqua	B.S. in Anthropology and B.S in Zoology. *Retired in September 2008.*	Heritage Resources
Michelle Lombardo	B.S. in Natural Resources, with an emphasis in Geology. M.S. in Geography, with an emphasis in Natural Resource Management. Planner with the Forest Service for three years.	Team Leader; Writer/Editor
Debbie Maldonado	B.S. in Anthropology. M.A. in Archaeology expected in 12/2008. Archeologist trainee with the Forest Service since 1996.	Heritage Resources
Todd Parker	B.S. in Forest Management and B.S. in Business Administration. Hydrologist on the Columbia Gorge and Zigzag Ranger Districts since 1992.	Hydrology; Wild and Scenic Rivers; GIS
Chris Rossel	B.S. in Fisheries Science. Fisheries biologist with the federal government since 1992.	Fisheries; Wild and Scenic Rivers
Kevin Slagle	B.S. in Forestry. Has worked with the Forest Service since 1979.	Recreation

5.0. List of Agencies and Persons Consulted

Consultation with individuals, organizations, and other agencies has occurred throughout this analysis. A summary of public involvement with others appears in Chapter 1. A summary of comments and responses in included in Appendix D. Following is a list of agencies and organizations contacted. Please refer to the project files for individuals contacted.

4-Point Timber Company
Alder Creek Lumber Company
American Forest Resource Council
American Rivers Inc.
Associated Oregon Loggers
B&T Logging Company
Backcountry Horsemen
Bark
Bob Lamphere's Beaverton/Honda
Boise Cascade Corporation
CAMBA
Camp Baldwin, Boy Scouts of America
Cascade Resources Advocacy Group
Cascade Sled Dog Club
Clackamas CC Library
Clackamas River Basin Council
Clackamas River Water
Citizens Interested in Bull Run
City of Dufur
City of Estacada
City of Fairview
City of Hood River
City of Lake Oswego
City of Mosier
City of Portland
City of Sandy
City of The Dalles
Clackamas River Water
Clearwater National Forest
CM-FPA
Cogan, Owens, Cogan, LLC
Columbia Gorge Institute
Columbia Gorge Off-Road Association
Columbia Gorge Power Sledders
Columbia Helicopters
Columbia River Gorge Commission
Confederated Tribes of Warm Springs
Dakine
David Evans and Associates, Inc.
Discover Bicycles
Dodge Logging, Inc.
E&M Logging
Earls Bros Logging
Environmental Middle School
Erickson Air Crane Company
Estacada Fire Department
Fernwood Logging
Fifteenmile Watershed Council
Fir Mountain Timber LLC
Friends of the Columbia Gorge
Friends of Mt. Hood
Fun Country Power Sports
Geo-visions
Gifford Pinchot Task Force
Gorge Commission
Government Camp Water Company
Gresham's Honda
Gresham Outlook
Hanel Lumber Company
Helicopter Loggers Association
Hood River County
Hood River County Board of Commissioners
Hood River County Forestry Department
Hood River County Planning Department
Hood River Crag Rats
Hood River Valley Residents Committee
Hood River Watershed Council
KB Trees, LLC
Lady Creek Water Systems
Linnton Plywood Assn
Longview Fibre, Clackamas Tree Farm
Longview Fibre, Mid Columbia Tree Farm
Mason, Bruce & Girard, Inc.
Mazama Conservation Committee
Mid-Columbia Fire and Rescue
Middle Fork Irrigation District
Mountain Times
Mt. Hood Meadows
Mt. Hood Polaris
Mt. Hood Snowmobile Club
Mt. Scott Motorcycle Club
Mt. Scott Water District
Mt. View Cycles
Mule Deer Foundation
Multnomah County Library
Multnomah Falls Co., Inc.
National Marine Fisheries Service
Native Plant Society of Oregon
Natural Resources Mgmt Corp
Nature of the Northwest

North Santiam Paving
Northwest Ecosystem Alliance
Northwest Environmental
Northwest Rafters Association
Northwest Ski Club Council
Oak Lodge Water District
Ochoco Lumber Company
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Department of Transportation
Oregon Hunters Association
Oregon Log Truckers Association
Oregon Nordic Club
Oregon Office of Governor
Oregon Parks & Recreation Department
Oregon Public Broadcasting
Oregon Wild
Our National Forests, Inc.
Pacific Crest Trail Association
Pacific Biodiversity Institute
Pacific Legal Foundation
Parametrix Library
PNW 4-Wheel Drive Association
Portland Audubon Society
Portland United Mountain Pedalers
Portland Water Bureau
Reed Forest Watch
Rocky Mountain Elk Foundation
Rosboro Lumber Company
Sandy Post Newspaper
Sandy River Basin Watershed Council
SDS Lumber Company
Sierra Club, Oregon Chapter
Skyline Hospital Sports Medicine & Physical Therapy
South Fork Water Board
Summit Ski Area
Timber Data Company
Timberline Lodge
Timberline Ski Area
The Dalles Watershed Council
The Nature Conservancy of Oregon
The Oregonian
The Resort at the Mountain
The Trust for Public Land
The Wilderness Society
Trout Unlimited
US Congressman David Wu
US Fish & Wildlife Service
US Senator Gordon Smith
US Senator Ron Wyden
USDA Office of General Counsel
Wasco County Board of Commissioners
Wasco County Court
Wasco County Planning & Development
Wasco County Soil & Water Conservation District
Wasco Electric Cooperative
West Side Fire District
Western Land Exchange Project
Western Wildlife Sportsman
Western Wood Products Association
Weyerhaeuser Company
Wild Wilderness
Wilderness Conservation Association, OSPIRG
Wildlife Management Institute
Winter Wildlands Alliance
Wolf Run Ditch Company

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