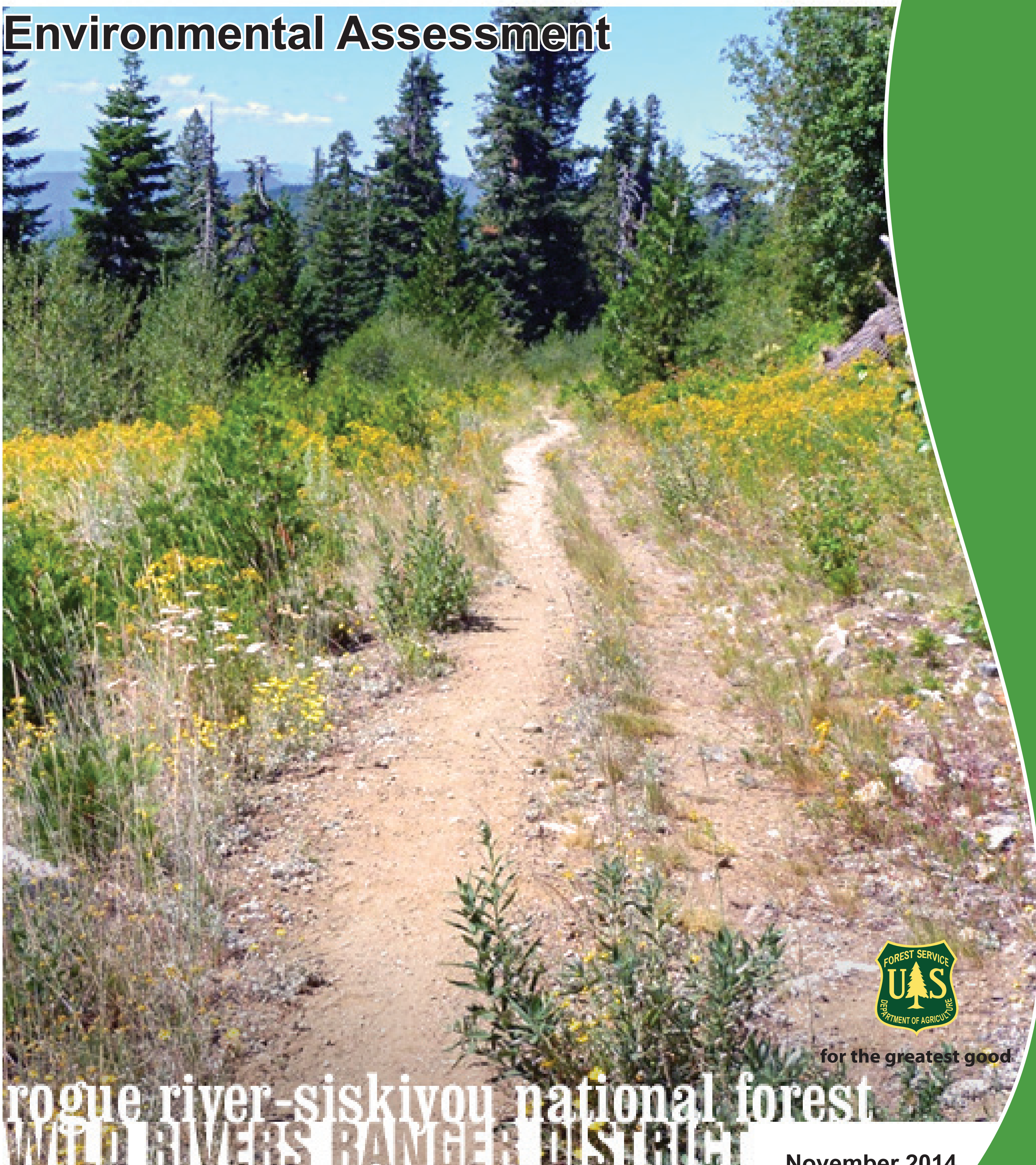
United States Department of Agriculture

Sucker Creek Legacy Roads and Trails

Environmental Assessment



for the greatest good

rogue river-siskiyou national forest

WILD RIVERS RANGER DISTRICT

November 2014

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Chapter I. Purpose and Need for Action

Introduction

We are proposing to restore watershed health, fisheries and wildlife habitat in the Sucker Creek watershed. by: (1) stormproofing 118 miles of road; (2) decommissioning 28 miles of road; (3) putting 31 miles of road into storage; and (4) converting 3 miles of road to non-motorized trail (table 2, table 3 and table 4) on National Forest System (NFS) lands in the Wild Rivers Ranger District of the Rogue River-Siskiyou National Forest.

We prepared this environmental assessment to determine whether effects of the above proposed activities may be significant enough to prepare an environmental impact statement. By preparing this environmental assessment, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. The project is intended to implement the forest's land management plan and is subject to the objection process specified in 36 CFR §218, subparts A and B. For more details of the modified proposed action, see chapter 2, alternative 2-modified proposed action section beginning on page 12.

Purpose and Need for the Proposal

The purpose of the Sucker Creek Legacy Roads and Trails project is to reduce the risk of sediment delivery to streams in the 5th field Sucker Creek watershed from National Forest System roads that cannot be maintained because of the lack of maintenance funding, while retaining roads needed for management, special uses, recreation, fire suppression, and other emergency needs. The need for the project is to restore watershed health and fisheries and wildlife habitat in the Sucker Creek watershed.

Location of the Proposed Project Area

The Sucker Creek Legacy Roads and Trails Project targets roads throughout the Sucker Creek watershed. The proposed project is located in Josephine County in Oregon, approximately 16 river miles (on Sucker Creek) upstream of Cave Junction, Oregon. The legal description of the project area includes roads and trails in Township 39 South, Range 6 West, T. 39 S. R. 5 W., T. 40 S., R. 6 W., T. 40 S., R. 5 W., and T. 41 S., R. 6 W., of the Willamette Meridian. Grayback, Lower Sucker, Middle Sucker, and Upper Sucker are 6th field hydrologic unit subwatersheds located within the Sucker Creek 5th field watershed (61,515 acres) (figure 1), which in turn, makes up 10 percent of the 628,000 acre Illinois River subbasin of the Rogue River Basin. The Illinois River subbasin makes up 20 percent of the 3.3 million acre Rogue River Basin. Sucker Creek flows into the East Fork Illinois River and then the Illinois River before proceeding to the Pacific Ocean via the Rogue River. This watershed is located within the Klamath Mountains Province of southwestern Oregon (USDA Forest Service 2011).

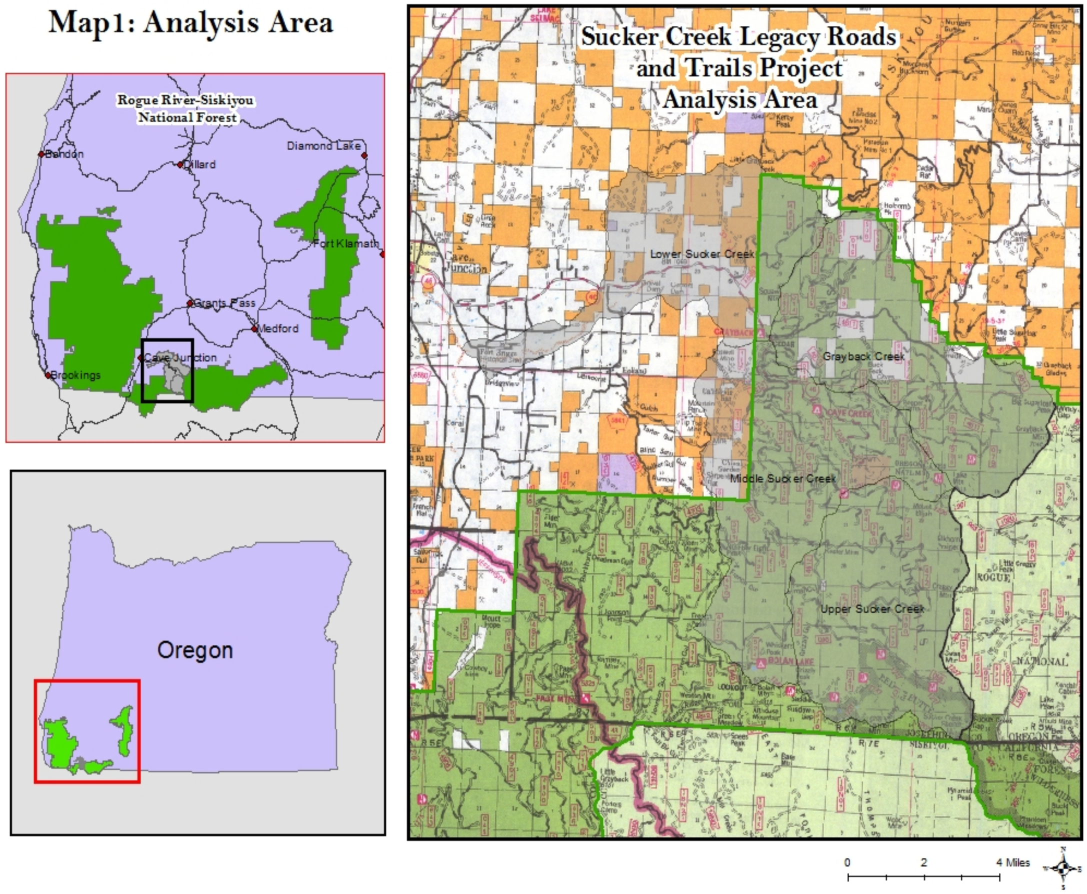

Figure 1. Sucker Creek watershed vicinity map

Background Information

While roads often provide important access and transportation, their presence can also influence the habitat quality, hydrology, geomorphology, and ecosystem processes of watersheds. Roads can substantially alter hillslope hydrology, overland flow can cause geomorphic changes, including chronic erosion, extended channel systems, and increased risk of landslides. Roads also influence the ecology of terrestrial and aquatic ecosystems through direct habitat loss, fragmentation, and associated human impacts as a result of increased access.

Aquatic systems are primarily affected by roads through the associated increase in peak stream flows, interception of overland flow, and addition of sediment from road surfaces. Increases in flow as a result of roads can cause stream bank cutting and channel destabilization. Too much sediment can embed fish spawning gravels and suffocate developing fish eggs that are laid there. The primary mechanism for the transfer of sediment is from culverts plugging at stream crossings (Siskiyou NF Storm Assessment 1998). Fill failures at stream crossings, and the subsequent landslide associated with it, can contribute substantial amounts of sediment to streams. It can take decades for this material to be flushed out of the channel through normal stream flows.

Roads also cause negative impacts to terrestrial habitat and wildlife including displacement or avoidance where animals alter their use of habitats (Gaines et al. 2003). Disturbance at a specific site is common and includes disruption of animal nesting, breeding, or wintering areas. Collisions between animals and vehicles occur to a variety of species from large mammals to amphibians. Finally, edge effects associated with roads or road networks constructed within habitats, especially late-successional forests, lead to lower habitat quality and increased predation and competition.

Road decommissioning activities have been in the forefront for watershed restoration projects over the last decade. Monitoring has shown it to be effective at reducing surface erosion and mass failure risk while increasing water infiltration rates and vegetative ground cover (e.g. Foltz et al. 2007; Cook and Dresser 2007). It can also have positive effects on wildlife from a reduction in habitat fragmentation and human disturbance (Switalski et al. 2007).

Currently, the Sucker Creek watershed contains approximately 200 miles of road with an average road density of 3.4 miles per square mile. National Forest System roads were engineered and built to allow for long-term use. Metal culverts were installed at stream crossings. Main haul routes had gravel surfaces and lesser used routes were either graveled or had a native (dirt) surface. The costs associated with maintaining the road system at current maintenance levels has become impractical under current funding levels, creating a large backlog of road maintenance and improvements. The Forest Service is currently able to maintain 20 percent or less of National Forest System roads each year.

The Sucker Creek watershed is located in the Rogue River Basin within the Southern Oregon Coastal Basin, which has been identified by the Forest Service in the Pacific Northwest Region as one of the three priority basins for watershed restoration. The Illinois River subbasin is identified as a focal basin and salmon stronghold by the nonprofit Wild Salmon Center. This stream contains some of the highest quality freshwater and fish habitat in the Illinois River subbasin. Sucker Creek is designated as a key watershed in the Northwest Forest Plan in recognition of the anadromous fish populations (fall Chinook salmon, coho salmon, winter steelhead, and Pacific lamprey). Coho salmon and its critical habitat within the Sucker Creek watershed are listed as Threatened under the Endangered Species Act. The upper Illinois River tributaries, including Sucker Creek, produce about 33 percent of the wild coho salmon in the entire Rogue basin. The Sucker Creek watershed has been identified as one of the top three priority watersheds on the Rogue River-Siskiyou National Forest for watershed restoration since 2006.

Additionally, in 2011, Grayback Creek and Middle Sucker Creek were identified as priority watersheds as part of the National Watershed Condition Framework (WCF), which is a comprehensive approach for proactively implementing integrated restoration on priority watersheds on national forests and grasslands. A Watershed Restoration Action Plan (WRAP) was completed for the Sucker Creek watershed in 2011, updating the 2007 WRAP for the watershed. The 2007 and 2011 WRAPs provide greater detail to the 1995 Grayback/Sucker Watershed Analysis by adjusting and adding essential projects to improve the subwatershed condition class, which addresses an outcome-based performance measure of progress toward restoring the productivity and resilience of watersheds and their associated aquatic systems on NFS lands.

Most of the watershed contains lands managed by the Rogue River-Siskiyou National Forest (71.7 percent) with primary Forest Service ownership on Grayback Creek (81.9 percent), Middle Sucker (80 percent), and Upper Sucker (99.9 percent). See figure 3, figure 5, and figure 6 respectively. A large portion of Grayback Creek, Middle Sucker Creek and Upper Sucker Creek subwatersheds are within the transient snow zone with narrow stream valleys and steep side slopes. The lower subwatershed—Lower Sucker Creek—has considerable private ownership (48.7 percent) within an unconfined valley setting with wide floodplains and some steeper dissected landscapes under public and private ownership (figure 4). Streamflows vary considerably from summer to winter and snowpack in upper Sucker Creek prolongs summer stream flows longer than most other watersheds in the Illinois River subbasin (USDA Forest Service 2011).

The watershed was a prime location for timber harvest from productive conifer forests on both public and private lands after World War II. The private lands downstream of public lands are primarily under agricultural use with some private timberlands on the surrounding hillslopes. The upper and middle subwatersheds have a long history of placer gold mining on public lands principally in the Sucker Creek stream channel and on the floodplain. Mining, agriculture, timber harvest and recreation have had a dramatic impact on the watershed since its settlement (by non-Indian people) in the mid-1800s. Conflicts between different uses and values continue, despite many efforts (USDA Forest Service 1995).

Current Condition

Fine sediment is prevalent in cobble interspace habitat in many stream reaches causing channel widening, water quality impairment and aquatic habitat simplification – particularly Grayback Creek and the depositional reaches of Sucker Creek. The road system contributes to habitat degradation from fine sediment in several ways: road-related slope failures, chronic sediment delivery, plugged culverts, and other road drainage problems are identified in the 1998 Siskiyou NF Flood Assessment and 2007 WRAP. Peak flows may also be affected by extension of the channel network by in-sloped roads and their accompanying ditches.

There are approximately 200 miles of road on National Forest System land within the Sucker Creek Watershed. Approximately 9 percent of all roads are within 100 feet of perennial streams, while 5 percent of all roads are within 100 feet of perennial fish bearing streams. In addition, there are 261 road crossings on perennial streams, and 26 road crossings on perennial fish bearing streams. The average road density (total road length for a given area) in the watershed is 3.4 miles per square mile, which is generally considered to be at moderate risk levels for generating cumulative watershed effects (USDA Forest Service 1995, 1998).

Roads in the riparian area have caused adverse impacts to salmonid habitat and production and water quality. Some culverts on Forest Service land are total fish barriers, although the amount of fish habitat above them is generally insignificant as the streams are steep and small (USDA Forest Service 2007).

The Upper Sucker Creek subwatershed is currently ranked as having a “functioning properly” condition class by Watershed Condition Framework model standards. Whereas, Grayback, Lower Sucker Creek and Middle Sucker Creek subwatersheds are currently ranked as having a “functioning at risk” condition class.

Desired Future Condition

Controlled drainage, stormproofing, or revegetation for closed roads maintained for future land management activities, and closed or decommissioned roads that are not needed for current or projected resource management. Priority work should focus on roads located in areas with erosive soils or where delivery of fine sediment can impact the fishery and water quality (USDA Forest

Service 2011). The target condition class for all subwatersheds in the Sucker Creek watershed is the "functioning properly" condition class[1].

The Northwest Forest Plan (USDI Bureau of Land Management and USDA Forest Service 1994) states that the objective of late-successional reserves is to protect and enhance conditions of late-successional and old-growth forest ecosystems. The plan also identified and directs the reduction of existing roads within key watersheds through the decommissioning of roads (page B-19) to contribute to the conservation of salmon species. Tier 1 key watersheds were designated because they contribute directly to conservation of at-risk fish species and to ensure refugia are well distributed.

The 1995 Grayback/Sucker Pilot Watershed Analysis (WA) identified a number of desired objectives for the watershed, which include (USDA Forest Service 1995, pages 4 to 7):

- Maintain and restore water quality (i.e., low turbidity and the sediment regime) by reducing rill and gully erosion from road drainage interceptions.
- Maintain and restore instream flows, protect timing, magnitude, duration, and distribution of peak, high, and low flows.
- Maintain and restore large wood delivery processes and sediment regime.

Proposed Action

Comments received during the scoping period led to several modifications to the proposed action, which led the responsible official to decide to analyze one action alternative. The modifications to the proposed action that was scoped to the public are discussed in chapter 2, alternative 2. The acres for the subsequent modified proposed action are presented here.

In response to the needs for action discussed in the sections above, this project would:

- Stormproof 118 miles of Forest Service System roads
- Decommission 28 miles of Forest Service System roads
- Put 31 miles of Forest Service System roads into storage
- Convert 3 miles of Forest Service System roads into non-motorized trails

Decision Framework

Given the purpose and need, the deciding official for this project reviews the modified proposed action and the other alternative in order to make the following decisions:

- to implement the alternative as proposed
- to select and modify the alternative
- to take no action at this time

The decision will be based on:

- how well the selected alternative achieves the purpose and need

[1] See the aquatic biota section in chapter 3 for description of functioning properly condition class and tier 1 key watersheds.

- how well the selected alternative protects the environment and addresses issues and concerns
- how well the selected alternative complies with relevant policies, laws and regulations

Management Direction

This Environmental Assessment tiers to the Siskiyou National Forest Land and Resource Management Plan Final Environmental Impact Statement and Record of Decision (1989), as amended by the Final Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan) (1994), and incorporates by reference the accompanying Siskiyou National Forest Land and Resource Management Plan (Siskiyou Forest Plan) (1989). When direction is inconsistent, the most restrictive direction applies.

Siskiyou Forest Plan

The Siskiyou Forest Plan (1989) established land management allocations for the Sucker Creek Legacy Roads and Trails project area (table 1 and figure 2). The standards and guidelines of the Siskiyou Forest Plan (1994) apply where they are more restrictive or provide greater benefits to late-successional forest-related species than do those identified in the Northwest Forest Plan. Actual decommissioning and stormproofing activities would occur on roadways within the project area for which the following designations have been made:

- **East IV/Williams-Deer Late-Successional Reserve (LSR)** – The Northwest Forest Plan set objectives for LSRs to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest species, including the northern spotted owl. Late-successional reserve is the largest land allocation within the Sucker Creek Watershed, covering approximately 26,286 acres.
- **Matrix/General Forest, Retention Visual, and Partial Retention Visual** – The Matrix is where most timber harvest and other silvicultural activities would be conducted under the Northwest Forest Plan. The Forest Plan goals for this allocation are to provide for long-term growth and production of commercially valuable wood products. Matrix covers approximately 6,250 acres of the Sucker Creek Watershed.
- **Congressionally Reserved Areas/Red Buttes Wilderness** – Congressionally Reserved Areas include lands that have been reserved by act of Congress for a specific purpose. A portion of the Red Buttes Wilderness, totaling approximately 2,831 acres, is located within the Sucker Creek Watershed.
- **Administratively Withdrawn Areas** – Administratively Withdrawn Areas identified in current Forest Plans, and within the Sucker Creek watershed include: Bigelow Lakes (proposed) Botanical Area, Bolan Lake (proposed) Botanical Area, Grayback Mountain (proposed) Botanical Area, Craggy Peak (proposed) Research Natural Area, several backcountry recreation areas, and numerous special wildlife sites. These areas cover 3,469 acres of the Sucker Creek Watershed.
- **Riparian Reserves/Riparian** – The purpose of these areas along streams, ponds, and other wetted areas, is to protect the health of the aquatic system and its dependent species. Riparian-dependent resources receive primary emphasis in these areas. Riparian Reserves vary in width from 100 to 300 feet on each side of a stream, pond, or wetted

area depending on the feature's particular characteristics. These allocations overlay the designations mapped in figure 2.

Table 1. Summary of Siskiyou Forest Plan land allocations within the Sucker Creek Watershed

Land Allocations in the Sucker Creek Watershed	Total Acres
East IV/Williams-Deer Late-Successional Reserve	26,290
Matrix/General Forest, Retention Visual, and Partial Retention Visual	6,250
Congressionally Reserved Areas/Red Buttes Wilderness	2,830
Administratively Withdrawn Areas	3,470
Riparian Reserve/Riparian	2,770

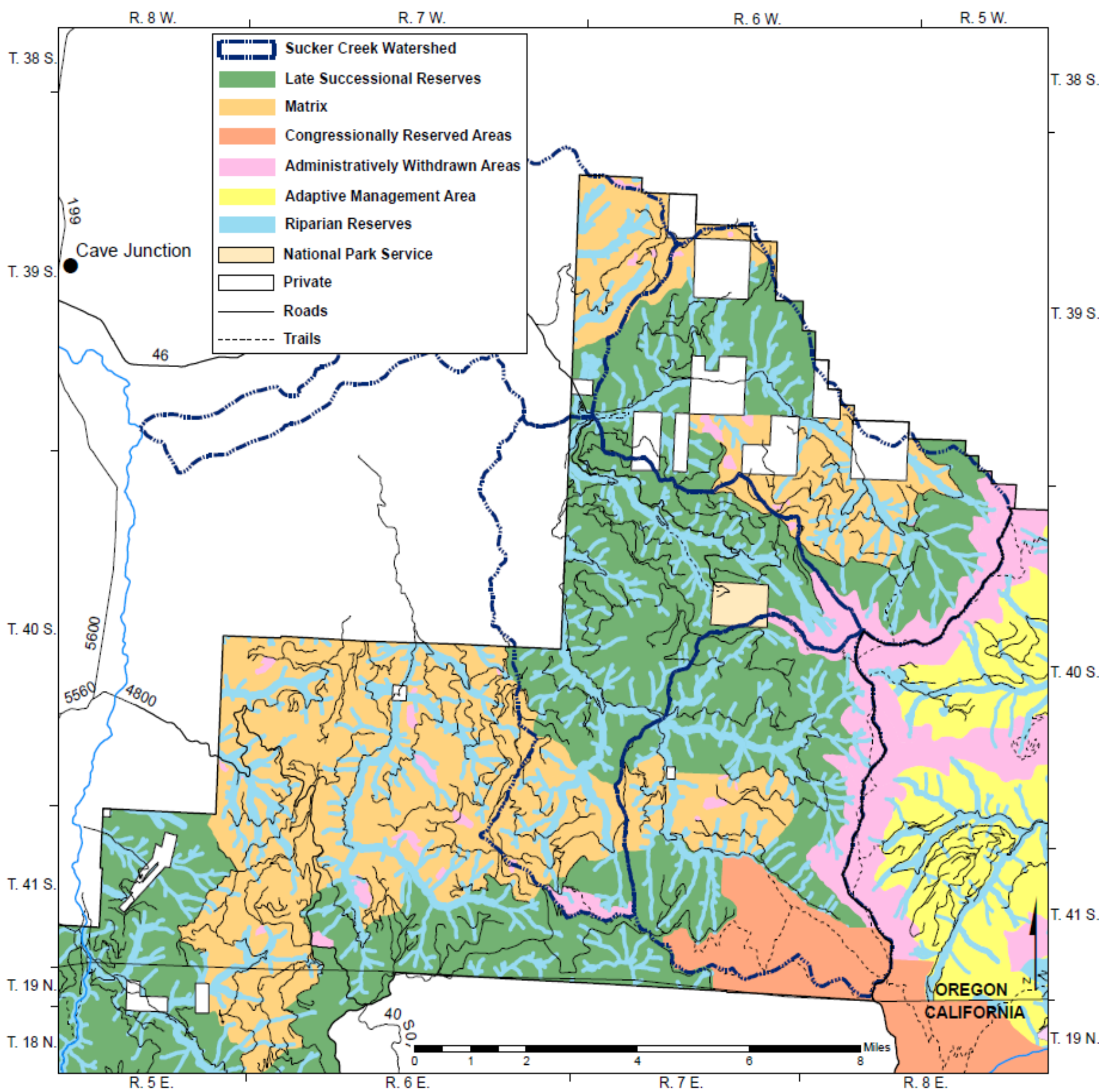

Figure 2. Siskiyou Forest Plan land allocations within the Sucker Creek watershed

Additional guidance for the Sucker Creek watershed is provided by the Grayback/Sucker Watershed Assessment (USDA Forest Service 1995, 1998), Sucker Creek Watershed Restoration Action Plan (USDA Forest Service 2011), and Southwest Oregon Late-Successional Reserve Assessment (USDA Forest Service 1995, 2004).

Port Orford Cedar FSEIS

The 2004 Port Orford cedar Final Supplemental Environmental Impact Statement (FSEIS) for the Management of Port Orford cedar in Southwest Oregon and the accompanying Record of Decision amended the 1989 Siskiyou Forest Plan. The FSEIS produced a risk key to determine the environmental conditions that require implementation of one or more disease-control treatments. The key also requires management to reduce appreciable additional risk to uninfested 7th field watersheds.

GIS and Best Available Science

The Forest Service uses the most current and complete data available. Geographic information system (GIS) data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those, for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification.

The best available science is considered in the preparation of this EA. However, what constitutes best available science might vary over time and across scientific disciplines as new science is brought into play. We show consideration of best available science when we insure the scientific integrity of the discussions and analyses in the project NEPA document. Specifically, this EA and the accompanying project record identifies methods used, references reliable scientific sources, discusses responsible opposing views, and discloses incomplete and unavailable information, scientific uncertainty and risk (40 CFR 1502.9 (b), 1502.22, 1502.24). The project record references all scientific information considered: papers, reports, literature reviews, review citations, academic peer reviews, science consistency reviews, and results of ground-based observations to validate best available science.

Public Involvement and Consultation

The proposal was first published in the Schedule of Proposed Actions (SOPA), which is available for public viewing on the Forest website, on October 1, 2010. The proposed action was mailed to the public and other agencies that have an interest in the project on September 20, 2013, for comment. A legal notice to initiate scoping was published on October 1, 2013 in the Grants Pass Courier. A total of 15 responses were received before or shortly after the public scoping period ended.

Separate government-to-government consultation was initiated with the Confederated Tribes of the Grand Ronde Community of Oregon and the Confederated Tribes of the Siletz. Letters were sent September 3, 2013. No specific concerns regarding project impacts on resources of tribal interest were identified.

A cultural resource inventory report was completed and submitted to the Oregon State Historic Preservation Office under the Programmatic Agreement among the United States Department of Agriculture Forest Service Pacific Northwest Region (Region 6), the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Officer Regarding Cultural

Resource Management in the State of Oregon by the USDA Forest Service (R6 PA), 2004. This report found no cultural resources.

Because this project fits under the categories described in the Re-initiation of the Endangered Species Act Section 7 Formal Programmatic Conference and Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Aquatic Restoration Activities in the States of Oregon and Washington (2013 ARBO) for category #12. Road and Trail Erosion Control and Decommissioning, no formal consultation with the National Marine Fisheries Service is required provided the project design criteria (chapter 2) are followed.

Issues

The NEPA requires Federal agencies to focus analysis and documentation on the important issues related to a proposed action. Analysis was completed for recreation, visuals, fire and fuels, cultural resources, hydrology, soils, sensitive plants, invasive plants, vegetation, Port Orford cedar, wildlife, aquatic biota, roads and mining. Information from these reports has been summarized in chapter 3. Separate biological evaluations were completed for terrestrial wildlife species and aquatic species for this analysis and are available in appendices C and D respectively.

The following issues have been identified associated with the proposed action.

Key Issues

Issues are defined in this environmental analysis as points of discussion, debate, or dispute about the environmental effects of a proposal. Key issues as used in this environmental analysis are those used to evaluate alternatives, affect the design of component proposals, prescribe mitigation measures, and/or describe important and variable environmental effects. They are 'key' because of the extent of their geographic consequence, the duration of the effects, or the intensity of interest or resource conflict.

NEPA requires Federal agencies to focus analysis and documentation on the key issues related to the proposed action. The interdisciplinary team (IDT), with Responsible Official involvement and approval, has identified the following as key issues associated with the proposed action presented in this analysis. These represent both public and internal issues.

1. **Impacts to fish and water quality from sediment delivery to streams** – Implementing recommendations to decommission and hydrologically stabilize the proposed road segments could reduce detrimental sediment sources and restore hydrologic function to many areas of the Sucker Creek watershed while lessening the risks to aquatic habitat and fisheries in these areas (especially the ESA listed Coho salmon).
2. **Change in access** – Issues with access for mining, recreation, hunting, and wildland fire escape routes were raised during scoping. Mineral claimants utilize road access to their claims for prospecting and mining operations. Decommissioning these open or closed roads could restrict access to these areas by making them impassable to vehicles.

Other Issues

Other issues as used in this environmental analysis are those that have been determined to be relevant, are used to disclose consequences, may affect design of component actions, may prescribe mitigation measures, or whose disclosure of environmental effects are required by law or policy. Other Issues differ from key issues in that they often describe minor and/or non-variable consequences.

This list is limited to those issues that specifically identify potential effects that may result from implementation of elements of the modified proposed action; their corresponding effects are documented in the EA. These represent both public and internal issues.

1. Soil Resources
2. Fire Risk
3. Terrestrial Wildlife
4. Port Orford cedar Root Disease
5. Botanical Resources
6. Non-native Plants
7. Visuals
8. Cultural Resources
9. Recreation/Human Safety
10. Wilderness
11. Climate Change

Out-of-Scope Issues

Out-of-scope issues include points of discussion that are not relevant to the proposed action, including those that cannot be addressed with a project level analysis, issues already decided by law, regulation, or other higher level decisions, and/or issues received from the public that were found to be conjectural or non-substantive. Out-of-scope issues are contained in the analysis file (generally in the analysis of public comment) and are not discussed further in this document.

- ♦ Decommission unauthorized mining routes and roads along Sucker Creek – Decommissioning unauthorized mining routes is outside the scope of this analysis because the Federal funds designated to design and implement this project are specifically for legacy road and trail projects. This effort would need to be undertaken under a separate NEPA effort.

Chapter II. Alternatives, Including the Proposed Action

Introduction

This chapter describes the process used to develop alternatives for the Sucker Creek Legacy Roads and Trails Project, including a description and map of the modified proposed action. This chapter also presents the alternatives in comparative form, defining the differences between each and providing a clear basis for choice among options for the decision maker.

Alternatives Considered in Detail

Two alternatives, alternative 1 (no-action) and alternative 2 (modified proposed action) were fully developed and are described in this section. The analyses of their effects are disclosed in chapter III. Actions included under alternative 2 are designed to address the issues identified by the ID team and incorporate the standards and guidelines established by the Siskiyou Forest Plan (1989), as amended by the Northwest Forest Plan (1994). All quantities illustrated for the alternatives in this environmental assessment and its appendices are estimates.

Alternative 1 – No Action

Function

The no-action alternative is required by the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14(d)). The no-action alternative provides a basis for evaluating environmental effects and comparisons with the proposed action. It provides information on components of the environment that may be affected by the proposed action. It also provides information about how the absence of an action may affect the environment. This alternative does not meet the purpose and need for the project.

Description

Under the no-action alternative, none of the proposed actions would occur and the road system in the Sucker Creek watershed would remain relatively unchanged. However, some resource management activities with implications for the road system are ongoing within the watershed, and current management plans would continue to guide management of the road system. The ongoing situation includes:

Current access would remain relatively unchanged with closed roads (roads that are bermed, gated, or overgrown) continuing to be inaccessible to motor vehicles and experiencing very little, if any, use for public or administrative needs. Roads that are currently open would remain open and available for access.

Current road restrictions are likely to change as a result of other management directives. Roads that are currently closed to motor vehicles would remain closed. Most roads that are currently open would likely remain open; but some open roads would be closed to motor vehicle use in the future due to travel planning currently in progress across the Rogue River-Siskiyou National Forest. Some decommissioning would likely occur in association with future projects, but at a smaller scale.

Current road maintenance is minimal and would remain so. Closed roads that are not open to motorized use have been put into a maintenance-free condition (waterbars for drainage, seeded with grass). Open roads receive the appropriate level of maintenance for use as needed and as funds are available.

Current risks and impacts to natural resources would continue. Roads would continue to increase the risk of uncontrolled water runoff, surface erosion, fill failures, and decreased slope stability. Leaving undersized culverts in place would increase the potential for future road failures. Road segments fragmented by failures would be difficult to decommission as access would be reduced (i.e. reaching the far end of a road with failures might not be possible). The no-action alternative has a higher risk of road failures and impacts to aquatic resources through sediment input than the proposed action.

Alternative 2 – Modified Proposed Action

Function

Under this alternative, the Forest Service would meet the project purpose and need by implementing the actions and treatments described and visually displayed (figure 3, figure 4, figure 5 and figure 6) in this section.

Description

Alternative 2 was developed through an interdisciplinary process. A team of resource specialists reviewed every road segment on National Forest System land in the Sucker Creek watershed to identify segments that would benefit the most from road treatment (e.g., to reduce sediment inputs into streams supporting Coho salmon), and segments to be maintained for access (e.g., for land management, emergency access, and recreation).

When there are no unresolved conflicts concerning alternative uses of available resources (NEPA, section 102(22) (E)), the EA need only analyze the proposed action and proceed without consideration of additional alternatives. (36 CFR 220.7(b)(2)(i)). Comments received during the scoping period led to several modifications to the proposed action, which led the responsible official to decide to analyze one action alternative. The modifications to the proposed action that was scoped to the public are:

Modifications to the Proposed Action

- **Modify 4600 from stormproof to no treatment** – This road is under the jurisdiction of the Federal Highways Administration and was mistakenly included in the proposed action sent to the public during scoping.
- **Modify FS Road 4611-042 from decommissioning to no treatment** – This road was initially proposed for decommissioning. However, further review of the US Forest Service's i-web database found that this road segment was already decommissioned around the year 2000.
- **Modify FS Road 4611-964 from decommissioning to storage –** This road was initially proposed for road decommissioning to reduce road density for wildlife benefits; this road does not have the issue of sediment delivery to streams. However, during scoping a commenter noted that this road segment is used to access a waterline for the Oregon Caves National Monument. Accordingly, alternative 2 was modified to put this road into storage to maintain access for future management needs by the National Park Service.

- **Modify FS Road 4612-058 from decommissioning to stormproofing** – This road was initially proposed for road decommissioning to reduce road density for wildlife benefits; this road does not have the issue of sediment delivery to streams. During scoping several commenters noted that this road accesses several mining claims. Accordingly, alternative 2 was modified to stormproofing to maintain access to these mining claims.
- **Modify a portion of FS Road 4612-069 from decommissioning to stormproofing** – This road was proposed for road decommissioning to reduce sediment delivery to streams; there are several culverts on the road that are problematic. Several commenters brought forward the information that the road is used by miners, hikers, and hunters. The first 0.25 miles is used to park cars and for camping. So, alternative 2 was modified to stormproof the first 0.25 miles of the road (to Sucker Creek), and then decommission the remainder of the road; the first 0.25 miles of FS Road 4612-069 does not have issues with sediment delivery to nearby streams.
- **Modify a portion of FS Road 4612-080 from decommissioning and constructing a new route, to stormproofing** – Initially 1.32 miles of this road was proposed for decommissioning, along with constructing a new 1.25-mile route to reduce sediment delivery issues from multiple stream crossings. This road is needed to access Matrix land and provide access for fire suppression. During scoping, several commenters brought up concerns both with constructing a new route and losing access for recreation into this area. Members of the ID team went on a fieldtrip to view the new proposed route and determined that constructing would not be feasible due to the terrain in the area and number of large trees that would need to be removed. Therefore, alternative 2 was modified to drop the proposal to construct a new route and decommission a portion of the road; FS Road 4612-080 is proposed for stormproofing only.
- **Modify FS Road 4612-465 from no treatment to decommissioning** – This road segment was initially overlooked for treatment in error. This road would lose access when FS Road 4612-069 is decommissioned as part of alternative 2; this road segment is now also being proposed for decommissioning.
- **Modify FS Road 4703-429 from decommissioning to no treatment** – This road segment is being dropped from treatment as part of this project because it is located outside of the Sucker Creek watershed boundary; it was mistakenly included in the proposed action sent to the public during scoping.
- **Modify FS Road 4703-440 from decommissioning to storage** – This road segment was initially proposed for decommissioning to reduce sediment delivery to streams and to reduce road density for wildlife. During scoping a commenter brought up a concern that this road is used to access several mining claims and for recreation by hunters. This road segment was modified from decommissioning to storage to maintain access to this area.
- **Modify FS Road 4703-458 decommissioning to stormproofing** – This road was initially proposed for road decommissioning to reduce road density for wildlife benefits; this road does not have the issue of sediment delivery to streams. During scoping a commenter brought up a concern that this road is used to access several mining claims. Therefore, alternative 2 was modified to stormproofing to maintain access to these mining claims.

The modified proposed action would meet the purpose and need by: (1) stormproofing 118 miles of road; (2) decommissioning 28 miles of road; (3) putting 31 miles of road into storage; and (4) converting 3 miles of road to non-motorized trail (table 2, table 3, and table 4). The treatment elements are defined below.

Stormproofing

Roads to be stormproofed are currently needed and needed into the future. Stormproofing activities are a part of road maintenance and consist of improving road drainage to protect the road surface and upgrading stream crossings to reduce the risk of sediment delivery to stream channels during storm events. Six culverts that are currently barriers to aquatic passage would be a high priority for replacement. Stormproofing work may entail any or all of the following treatments:

- Apply rock aggregate or paving to the road surface where necessary
- Add rolling dips where feasible
- Upgrade stream crossing culverts to withstand 100-year peak flows and/or debris flows
- Construct dips at stream crossing that have a diversion potential
- Install downspouts
- Add ditch relief culverts
- Improve ditch line
- Fill in road ditch and outslope roads where feasible
- Where the ditch is hydrologic connect to a stream install a cross-drain to prevent ditch water from entering a stream channel
- Provide fish passage

Road Decommissioning

Road decommissioning is the physical treatment of a roadbed to restore the integrity of associated hillslopes, channels, and flood plains and their related hydrologic, geomorphic, and ecological processes and properties. Two levels of road decommissioning are proposed. “Level a” treatments would be more intensive and occur on any road with a road stream crossing. Treatment would include culvert removal, outsloping, scarification, and revegetation of all or part of the road segment. There are approximately 28 culverts on live streams that are proposed for removal under these treatments. “Level b” treatments would be less intensive and occur on roads with no stream crossings and few if any ditch drainage culverts. This treatment would only occur on part of the road segment. The road would be closed to motor vehicles either using barricades or recontouring. Waterbar installation and ditch drainage culvert removal would also occur.

The objectives of road decommissioning include:

- Reducing the risk of mass failures and subsequent impact on streams
- Protecting fish and fish habitat
- Restoring natural surface and subsurface drainage patterns
- Restoring vegetation and site productivity
- Restoring stream channels at road crossings
- Increasing road maintenance cost-effectiveness by concentrating available funds on roads needed for long-term access
- Restoring terrestrial habitat that has been invaded by vehicles and other human activities

The primary goals of road decommissioning are to restore natural drainage patterns and infiltration capacity. Decommissioning a road involves one or more of the following restorative actions, dependent upon site-specific evaluations and recommendations of resource specialists:

- Removing drainage structures including culverts and bridges
- Pulling back stream banks to natural channel slope
- Restoring out-slopes for drainage by placing waste on sub-grade to reestablish original ground lines
- Outsloping roads by pulling sub-grade material back toward the hillslope
- Constructing cross-drains and waterbars
- Scattering woody debris on road travel ways
- Subsoiling and/or ripping compacted road travel ways
- Seeding and/or planting road travel ways with native seed and vegetation (conifers, hardwoods, shrubs)
- Blocking road entrances with barriers

Decommissioned roads are removed from the Forest transportation system once restorative actions have been implemented and closing barriers installed.

Storage

Roads that were identified as needed for reasonably foreseeable future resource management activities would be closed to vehicular traffic until needed, and changed in the Forest Service transportation system to custodial maintenance "level 1." These roads would be closed for periods of 1 year or more.

Objectives for Level 1 closed roads are to eliminate traffic and minimize resource impacts. Road surface deterioration may occur at this level. Management emphasis for these roads is on maintaining drainage facilities and runoff patterns. The treatment on these roads would include the removal of high risk road stream crossings with the culverts stored on-site for easy installation if the road is reopened, construction of cross drains, and blocking the road entrance with a barrier. There are approximately 44 culverts on live streams which are proposed for removal due to the high sediment yield and high plug potential associated with them. Ditch drainage culverts and low risk culverts on stream crossings would be left in place for future road use.

Closing roads under Level 1 custodial maintenance involves one or more of the following actions, dependent upon site specific evaluations and recommendations of resource specialists:

- Construct a dip in the fill at road stream crossings
- Fills and culverts would be removed and stored at the site for culvert stream crossing identified as having a high potential to fail and impact anadromous fish habitat and water quality
- Sub-soiling or ripping a portion of the compacted road travel way
- Constructing a series of cross-drains and or waterbars
- Blocking the road entrance with a barrier

Conversion of Road to Trail

Several roads in the watershed were identified in the interdisciplinary process as not needed and proposed for decommissioning with part of the road template converted into a non-motorized trail to expand the existing trail system.

Conversion of a road to a non-motorized trail would involve the removal or replacement of all culverts, blocking the road entrance to motorized vehicles, installation of cross drains, and ripping of some of the road surface where needed to improve revegetation and narrow the road prism. There are approximately 24 culverts on live streams that would be removed.

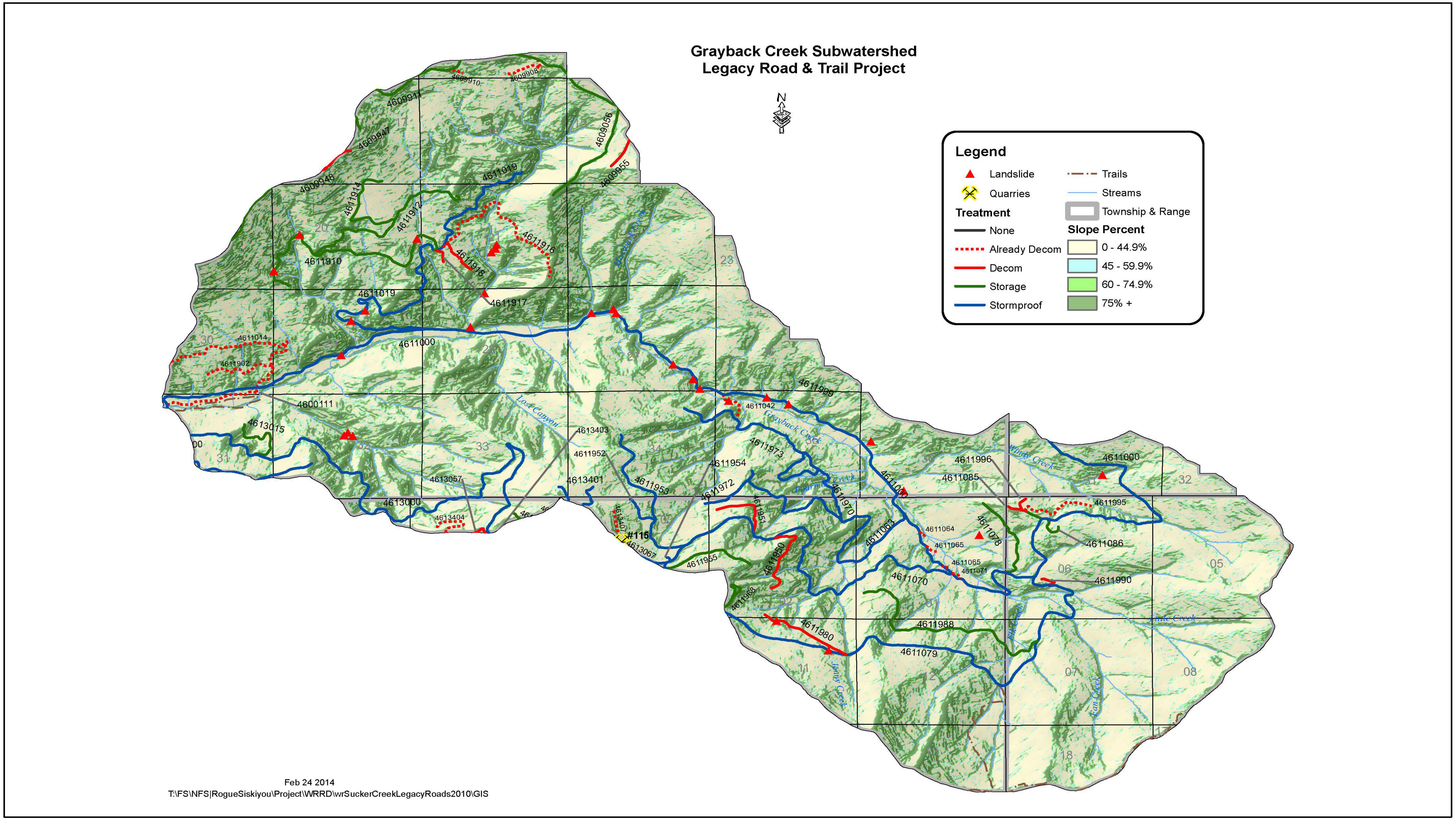

Figure 3. Alternative 2-modified proposed action: Treatments proposed for Grayback Creek Subwatershed

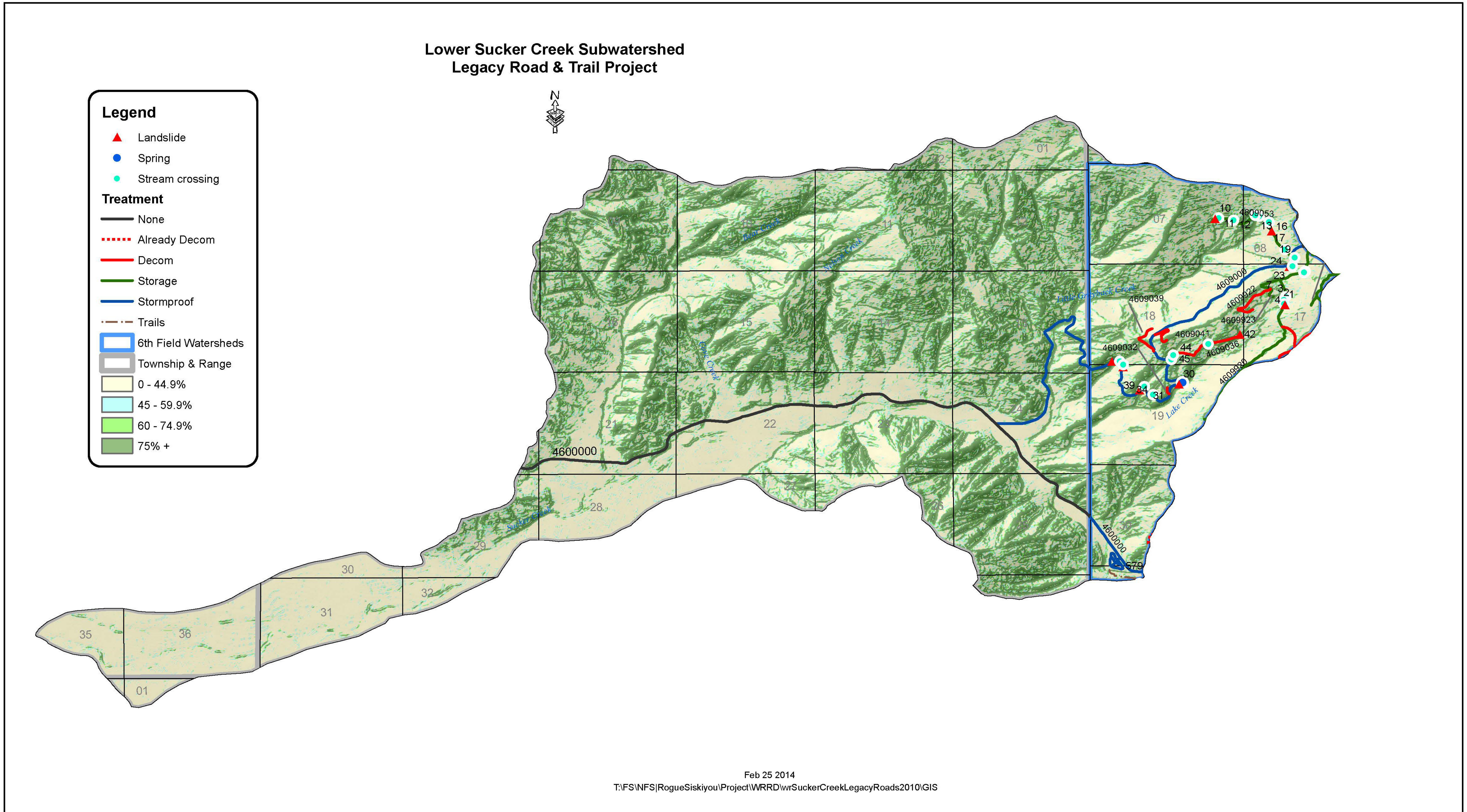

Figure 4. Alternative 2-modified proposed action: Treatments proposed for Lower Sucker Creek Subwatershed

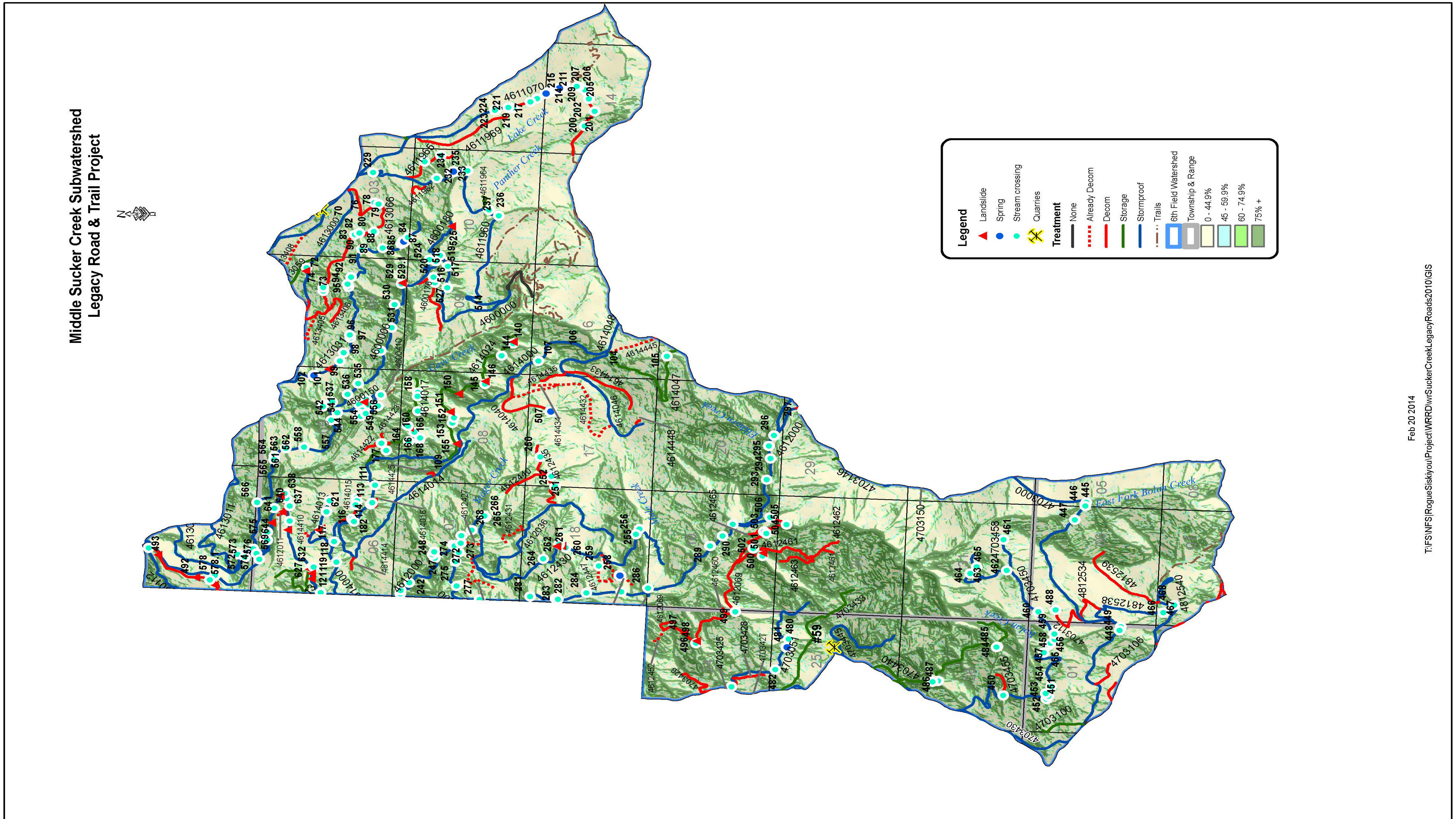

Figure 5. Alternative 2-modified proposed action: Treatments proposed for Middle Sucker Creek Subwatershed

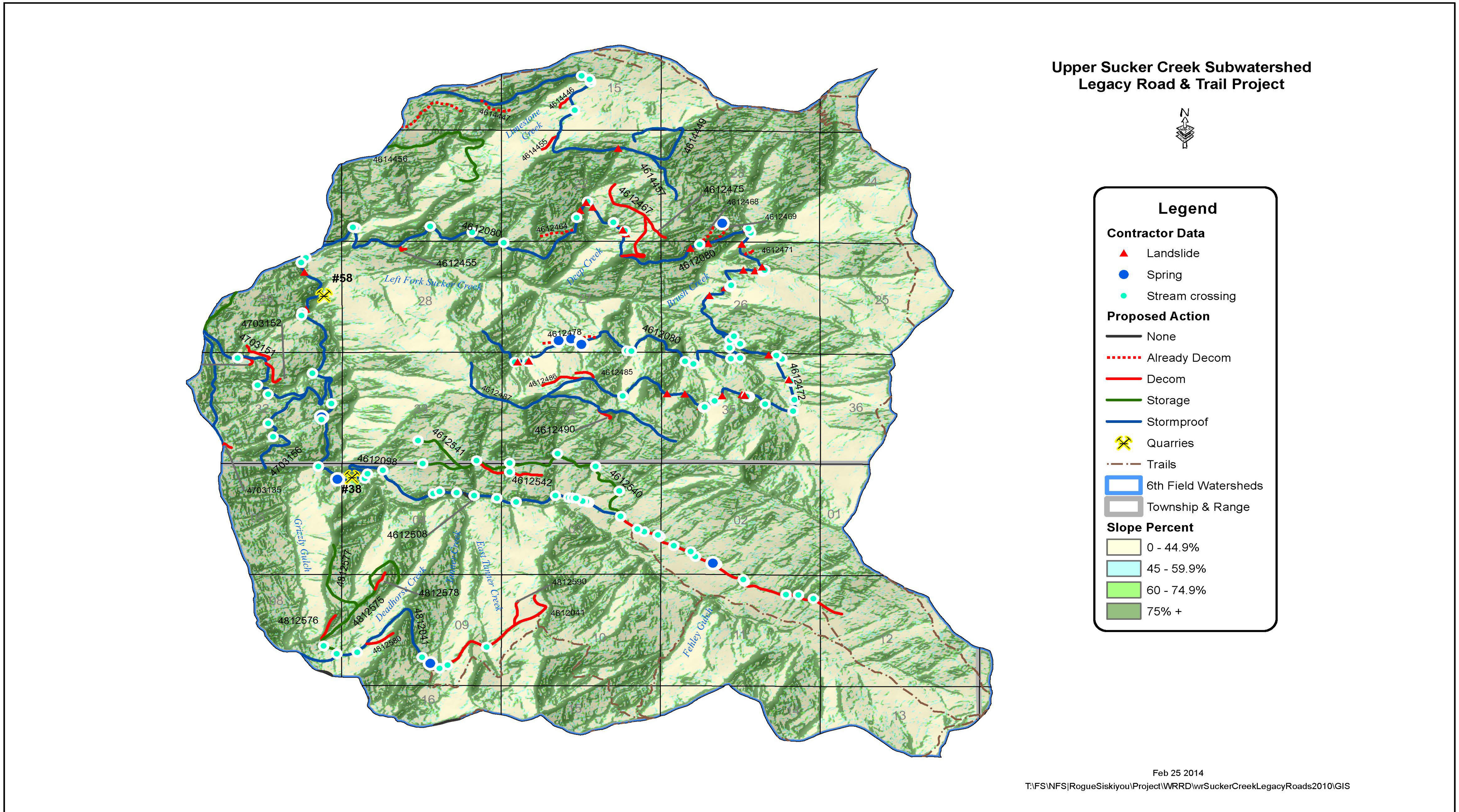

Figure 6. Alternative 2-modified proposed action: Treatments proposed for Upper Sucker Creek Subwatershed

Table 2. Potential sediment delivery (yd^3) from roads proposed for decommissioning in the Sucker Creek Project by alternative

Road number	Road miles	Proposed treatment	Alternative 1			Alternative 2			
			Potential sediment delivery from culvert failures before treatment (yds^3)	Potential sediment delivery from other sediment sources before treatment (yds^3)	Total potential sediment yield before treatments (yds^3)	Number of culverts proposed for removal	Potential sediment during and post decom (yds^3)	Potential sediment delivery from other sediment sources after treatment (yds^3)	Total potential sediment yield after treatments (yds^3)
Grayback Creek Watershed									
4609-947	0.15	Level b	0	0	0	0	0	0	0
4609-948	0.05	Level b	0	0	0	0	0	0	0
4609-955	0.28	Level b	0	0	0	0	0	0	0
4611-085	0.15	Level b	0	0	0	0	0	0	0
4611-917	0.14	Level b	0	0	0	0	0	0	0
4611-918	0.30	Level b	0	0	0	0	0	0	0
4611-950	0.72	Level a	183	0	183	1	18	0	18
4611-951	0.51	Level b	0	0	0	0	0	0	0
4611-980	0.69	Level a	201	18	219	1	20	6	26
4611-990	0.15	Level b	0	0	0	0	0	0	0
4611-996	0.13	Level b	0	0	0	0	0	0	0
4613-057	0.12	Level b	0	0	0	0	0	0	0
Subtotal	**3.39**		**384**	**18**	**402**	**2**	**38**	**6**	**44**
Lower Sucker Creek Watershed									
4609-032	0.07	Level b	0	0	0	0	0	0	0
4609-036	0.63	Level b	0	489	489	0	0	171	171
4609-039	0.32	Level b	0	0	0	0	0	0	0
4609-041	0.28	Level b	0	0	0	0	0	0	0
4609-922	0.46	Level b	0	10	10	0	0	4	4
4609-947	0.33	Level b	0	0	0	0	0	0	0

Road number	Road miles	Proposed treatment	Alternative 1			Alternative 2			
			Potential sediment delivery from culvert failures before treatment (yds³)	Potential sediment delivery from other sediment sources before treatment (yds³)	Total potential sediment yield before treatments (yds³)	Number of culverts proposed for removal	Potential sediment during and post decom (yds³)	Potential sediment delivery from other sediment sources after treatment (yds³)	Total potential sediment yield after treatments (yds³)
4609-948	0.10	Level b	0	0	0	0	0	0	0
Subtotal	**2.19**		**0**	**499**	**499**	**0**	**0**	**175**	**175**
Middle Sucker Creek Watershed									
4600-113	1.09	Level a	0	1,521	1,521	0	0	532	532
4600-176	0.71	Level a	0	71	71	0	0	25	25
4611-070	1.35	Convert to trail	403	875	1,278	10	40	306	346
4611-962	0.19	Level b	0	0	0	0	0	0	0
4611-965	0.51	Level a	93	26	119	1	9	9	18
4611-969	0.80	Level b	0	0	0	0	0	0	0
4612-011	0.16	Level a	0	350	350	0	0	123	123
4612-069	2.28	Level a	2,266	221	2,487	4	227	77	304
4612-435	0.74	Level a	1,108	0	1,108	3	111	0	111
4612-440	0.40	Level b	0	0	0	0	0	0	0
4612-460	0.07	Level b	0	0	0	0	0	0	0
4612-461	0.99	Level a	387	90	477	1	39	32	71
4612-462	0.16	Level b	0	0	0	0	0	0	0
4612-463	0.37	Level b	0	0	0	0	0	0	0
4612-465	0.20	Level b	0	110	110	0	0	39	39
4613-057	0.27	Level b	0	0	0	0	0	0	0
4613-066	1.82	Level a	771	67	838	10	77	23	100
4613-406	0.41	Level b	0	0	0	0	0	0	0
4614-015	0.34	Level a	422	356	778	3	42	125	167

Road number	Road miles	Proposed treatment	Alternative 1			Alternative 2			
			Potential sediment delivery from culvert failures before treatment (yds^3)	Potential sediment delivery from other sediment sources before treatment (yds^3)	Total potential sediment yield before treatments (yds^3)	Number of culverts proposed for removal	Potential sediment during and post decom (yds^3)	Potential sediment delivery from other sediment sources after treatment (yds^3)	Total potential sediment yield after treatments (yds^3)
4614-016	0.14	Level b	0	0	0	0	0	0	0
4614-040	0.72	Level b	0	0	0	0	0	0	0
4614-414	0.11	Level b	0	0	0	0	0	0	0
4614-422	0.13	Level a	357	0	357	1	36	0	36
4614-423	0.30	Level b	0	0	0	0	0	0	0
4614-425	0.07	Level b	0	0	0	0	0	0	0
4614-433	0.71	Level b	0	0	0	0	0	0	0
4614-435	0.21	Level b	0	0	0	0	0	0	0
4614-448	0.06	Level b	0	0	0	1	0	0	0
4703-106	0.25	Level b	0	0	0	0	0	0	0
4703-112	0.53	Level b	0	35	35	0	0	35	35
4703-135	0.02	Level b	0	0	0	0	0	0	0
4703-425	0.14	Level b	0	0	0	0	0	0	0
4703-426	0.40	Level b	0	0	0	0	0	0	0
4703-428	0.25	Level b	0	0	0	0	0	0	0
4703-455	0.26	Level b	38	0	38	1	4	0	4
4703-521	0.19	Level b	0	0	0	0	0	0	0
4812-534	0.35	Level b	0	0	0	0	0	0	0
4812-535	0.32	Level b	0	0	0	0	0	0	0
4812-539	0.79	Level b	0	0	0	0	0	0	0
Subtotal	**18.81**		**5,845**	**3,722**	**9,567**	**35**	**585**	**1,326**	**1,911**

Road number	Road miles	Proposed treatment	Alternative 1			Alternative 2			
			Potential sediment delivery from culvert failures before treatment (yds^3)	Potential sediment delivery from other sediment sources before treatment (yds^3)	Total potential sediment yield before treatments (yds^3)	Number of culverts proposed for removal	Potential sediment during and post decom (yds^3)	Potential sediment delivery from other sediment sources after treatment (yds^3)	Total potential sediment yield after treatments (yds^3)
Upper Sucker Creek Watershed									
4612-098	1.78	Convert to trail	7,798	1	7,799	14	783	0	783
4612-455	0.09	Level b	0	0	0	0	0	0	0
4612-467	0.98	Level b	0	0	0	0	0	0	0
4612-475	0.23	Level b	0	0	0	0	0	0	0
4612-485	0.15	Level b	0	0	0	0	0	0	0
4612-486	0.29	Level b	0	0	0	0	0	0	0
4612-490	0.15	Level b	0	0	0	0	0	0	0
4612-542	0.45	Level b	97	0	97	1	10	0	10
4614-446	0.11	Level b	0	0	0	0	0	0	0
4614-455	0.16	Level b	0	0	0	0	0	0	0
4703-135	0.07	Level b	0	0	0	0	0	0	0
4703-150	0.12	Level b	0	0	0	0	0	0	0
4703-151	0.23	Level b	0	0	0	0	0	0	0
4703-152	0.24	Level b	0	0	0	0	0	0	0
4812-041	1.10	Level a	3,162	0	3,162	3	316	0	316
4812-576	0.25	Level b	0	0	0	0	0	0	0
4812-578	0.16	Level b	0	0	0	0	0	0	0
4812-580	0.20	Level b	0	0	0	0	0	0	0
4812-590	0.23	Level b	0	0	0	0	0	0	0
Subtotal	**6.99**		**11,057**	**1**	**11,058**	**18**	**1,109**	**0**	**1,109**

Road number	Road miles	Proposed treatment	Alternative 1			Alternative 2			
			Potential sediment delivery from culvert failures before treatment (yds^3)	Potential sediment delivery from other sediment sources before treatment (yds^3)	Total potential sediment yield before treatments (yds^3)	Number of culverts proposed for removal	Potential sediment during and post decom (yds^3)	Potential sediment delivery from other sediment sources after treatment (yds^3)	Total potential sediment yield after treatments (yds^3)
Total for Sucker Creek Analysis Area	**31.38**		**17,321**	**4,205**	**21,526**	**49**	**1,732**	**1,507**	**3,239**

*Maintenance level 1 – Basic custodial care (closed); Maintenance level 2 – High clearance vehicles; Maintenance level 3 – Suitable for passenger cars; Maintenance level 4 – Moderate degree of user comfort; and Maintenance level 5 – High degree of user comfort.

**AC – Asphalt; AGG – Crushed aggregate or gravel; BST – Bituminous surface treatment; and NAT – Native material.

***Level of decommissioning:

Level a – More Intensive treatment (e.g., culvert removal, outsloping, scarification/decompaction, revegetation) in part or all of the road segment in order to achieve restoration objectives.

Level b – Less intensive treatment across only part of the road or road segment (e.g., waterbars, small culvert removal, entrance blockage) to achieve restoration objectives.

****Priority for treatment:

Tier 1 – Area of roads with highest potential sediment delivery to streams.

Tier 2 – Area of roads with intermediate potential sediment delivery to streams.

Tier 3 – Area of roads with lowest potential sediment delivery to streams

Table 3. Potential sediment delivery (yd^3) from roads proposed for storage in the Sucker Creek Project by alternative

Road number	Road miles	Alternative 1			Alternative 2			
		Potential sediment delivery from culvert failures before treatments (yds^3)	Potential sediment delivery from other sediment sources before treatment (yds^3)	Total potential sediment delivery before treatments (yds^3)	Number of culverts proposed for removal	Potential sediment during and post storage (yds^3)	Potential sediment delivery from other sediment sources after treatment (yds^3)	Total potential sediment yield after treatments (yds^3)
Grayback Creek Watershed								
4609-056	2.25	0	0	0	0	0	0	0
4609-911	0.47	0	0	0	0	0	0	0
4609-920	0.57	0	0	0	0	0	0	0
4611-078	0.82	109	0	109	0	109	0	109
4611-085	0.11	0	0	0	0	0	0	0
4611-086	0.22	0	0	0	0	0	0	0
4611-910	2.09	1,931	2,391	4,322	6	193	837	1,030
4611-912	1.53	1,626	0	1,626	6	229	0	229
4611-914	0.86	122	0	122	1	12	0	12
4611-955	0.67	0	0	0	0	0	0	0
4611-968	0.40	0	0	0	0	0	0	0
4611-988	1.79	1,353	4	1,357	6	135	1	136
4613-015	0.64	55	7	62	1	6	2	8
4613-059	0.08	0	0	0	0	0	0	0
Subtotal	**12.50**	**5,196**	**2,402**	**7,598**	**20**	**684**	**840**	**1,524**
Lower Sucker Creek Watershed								
4609-053	0.91	616	602	1,218	7	62	211	273
4609-056	0.01	0	0	0	0	0	0	0
4609-911	0.36	0	0	0	0	0	0	0

Road number	Road miles	Alternative 1			Alternative 2			
		Potential sediment delivery from culvert failures before treatments (yds³)	Potential sediment delivery from other sediment sources before treatment (yds³)	Total potential sediment delivery before treatments (yds³)	Number of culverts proposed for removal	Potential sediment during and post storage (yds³)	Potential sediment delivery from other sediment sources after treatment (yds³)	Total potential sediment yield after treatments (yds³)
4609-912	0.10	0	0	0	0	0	0	0
4609-920	1.47	439	208	647	3	44	73	117
4609-922	0.25	0	0	0	0	0	0	0
4609-923	0.10	0	0	0	0	0	0	0
Subtotal	**3.20**	**1,055**	**810**	**1,865**	**10**	**106**	**284**	**390**
Middle Sucker Creek Watershed								
4611-964	0.15	0	0	0	0	0	0	0
4611-968	0.03	0	0	0	0	0	0	0
4612-013	0.76	394	93	487	1	39	33	72
4613-059	0.30	0	0	0	0	0	0	0
4614-017	1.24	4,332	1,286	5,618	8	436	450	886
4614-024	1.76	533	1,164	1,697	2	53	407	460
4614-047	1.25	6	0	6	0	6	0	6
4614-456	0.04	0	0	0	0	0	0	0
4703-100	0.35	0	0	0	0	0	0	0
4703-146	0.05	0	0	0	0	0	0	0
4703-433	1.29	0	0	0	0	0	0	0
4703-440	1.81	1,158	0	1,158	4	116	0	116
Subtotal	**9.03**	**6,423**	**2,543**	**8,966**	**15**	**650**	**890**	**1,540**

Road number	Road miles	Alternative 1			Alternative 2			
		Potential sediment delivery from culvert failures before treatments (yds³)	Potential sediment delivery from other sediment sources before treatment (yds³)	Total potential sediment delivery before treatments (yds³)	Number of culverts proposed for removal	Potential sediment during and post storage (yds³)	Potential sediment delivery from other sediment sources after treatment (yds³)	Total potential sediment yield after treatments (yds³)
Upper Sucker Creek Watershed								
4612-540	1.96	1,150	0	1,150	6	115	0	115
4612-541	0.41	602	0	602	1	60	0	60
4614-047	1.26	469	0	469	1	47	0	47
4614-456	0.03	0	0	0	0	0	0	0
4703-146	0.44	0	0	0	0	0	0	0
4812-575	1.32	0	0	0	0	0	0	0
4812-577	0.67	0	0	0	0	0	0	0
Subtotal	**6.09**	**2,221**	**0**	**2,221**	**8**	**222**	**0**	**222**
Total for Sucker Creek Analysis Area	**30.82**	**14,901**	**5,755**	**20,656**	**53**	**1,662**	**2,014**	**3,676**

Table 4. Potential sediment delivery (yd^3) from roads proposed for stormproofing in the Sucker Creek Project by alternative

Road number	Road miles	Current maintenance level	Potential sediment yield before stormproofing treatment (yds^3)	Potential sediment yield after stormproofing treatment (yds^3)
Grayback Creek Watershed				
4611	10.88	3	24,162	8,457
4611-019	3.48	1	1,282	449
4611-063	2.57	2	1,048	367
4611-070	3.35	2/3	5,396	1,889
4611-079	3.92	2	7,890	2,762
4611-952	0.31	2	0	0
4611-953	1.45	1	22	8
4611-954	0.05	2	0	0
4611-970	0.77	2	401	140
4611-972	0.39	2	0	0
4611-973	1.88	1	930	326
4613	4.79	3	1,814	635
4613-011	0.73	2	0	0
4613-031	0.01	2	0	0
4613-067	0.24	2	0	0
4613-401	0.27	2	0	0
Subtotal	**35.09**		**42,945**	**15,031**
Lower Sucker Creek Watershed				
4600-105	0.43	3	0	0
4600-105A	0.09	3	0	0
4600-105B	0.05	3	0	0
4600-105C	0.05	3	0	0

Road number	Road miles	Current maintenance level	Potential sediment yield before stormproofing treatment (yds^3)	Potential sediment yield after stormproofing treatment (yds^3)
4609	5.73	2/3	2,564	897
Subtotal	**6.35**		**2,564**	**897**
Middle Sucker Creek Watershed				
4600-112	0.65	2	19	7
4600-150	1.09	3	15,460	5,411
4600-180	0.64	1	736	258
4600-410	0.07	2	1,106	387
4611-070	1.43	2	116	41
4611-079	0.01	2	0	0
4611-960	2.94	2	1,696	594
4612	8.18	3	40,508	14,178
4612-036	2.71	2	1,324	463
4612-058	0.10	1	0	0
4612-069	0.33	1	17	6
4612-080	0.36	2	0	0
4612-430	2.35	2	4,719	1,652
4613	2.07	3	171	60
4613-011	1.07	2	0	0
4613-031	2.47	2	2,324	813
4613-067	0.81	2	0	0
4613-401	0.02	2	0	0
4614	4.52	2	3,639	1,274
4614-013	0.73	2	383	134
4614-014	1.92	2	0	0

Road number	Road miles	Current maintenance level	Potential sediment yield before stormproofing treatment (yds^3)	Potential sediment yield after stormproofing treatment (yds^3)
4614-046	1.52	2	0	0
4614-048	0.28	2	0	0
4703	3.49	2	2,512	879
4703-051	1.37	2	240	84
4703-430	1.03	2	0	0
4703-445	1.00	2	0	0
4703-450	3.44	2	1,517	531
4703-458	0.34	2	149	52
4812-538	0.90	2	0	0
4812-540	0.93	2	61	21
4812-540A	0.09	2	0	0
Subtotal	**48.86**		**76,697**	**26,844**
Upper Sucker Creek Watershed				
4612	1.48	3	9,414	3,295
4612-080	8.34	2	20,473	7,166
4612-098	3.38	2	10,959	3,836
4612-472	4.13	2	14,382	5,034
4612-487	0.80	2	0	0
4614-048	2.58	2	1,333	467
4614-449	0.80	1	0	0
4614-457	0.45	1	0	0
4703	2.71	2	2,336	818
4703-156	1.02	1	460	161
4812-041	1.52	3	201	70

Road number	Road miles	Current maintenance level	Potential sediment yield before stormproofing treatment (yds^3)	Potential sediment yield after stormproofing treatment (yds^3)
Subtotal	**27.21**		**59,558**	**20,845**
Total for Sucker Creek Analysis Area	**117.51**		**181,764**	**63,617**

Mitigation Measures and Project Design Criteria

Mitigation, as defined in the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1508.20) includes: 1) avoiding the impact altogether by not taking a certain action or parts of an action, 2) minimizing impacts by limiting the degree or magnitude of the action and its implementation, 3) rectifying or eliminating the impact over time by preservation and maintenance operations during the life of the action, 4) compensating for the impact by replacing or providing substitute resources or environments, and 5) rectifying the impact by repairing, rehabilitating, or restoring the affected environment. “Project design criteria” would be employed during on-the-ground project designation and implementation and are designed to address overall objectives (attain the purpose and need) and “mitigation measures” are designed to minimize consequences during actual project operations. Standards and guidelines and mitigation measures identified in the Siskiyou Forest Plan, as amended, are incorporated by reference as required mitigation measures. In addition, all contracts or other methodology for implementation of actions would comply with all requirements and standards for protection of threatened, endangered, and sensitive species, in compliance with the Endangered Species Act. Project design criteria would be implemented through project design and implementation, contract specifications, contract administration, and monitoring activities performed by Forest Service officers.

Note that some measures would be enacted only if certain (future) conditions exist that would require it (e.g., if a nesting pair of spotted owls is discovered within 0.25 miles of an activity area, or a previously unknown heritage site is discovered).

Proposed mitigation measures and standard operating procedures designed to avoid or minimize adverse effects (or implement positive effects) for the alternatives are identified by resource topic area, and in some cases, by the specific component or sub-component project within the proposed activity. These measures are specific to implementation of actions considered within this EA.

We developed the following project design criteria and mitigation measures to apply to the modified proposed action. These criteria were developed to reduce or eliminate adverse impacts from project activities. Project design criteria are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions. Project design criteria are non-discretionary once approved in a decision. Project design criteria do not apply to alternative 1- no action because no project activities are proposed; no changes would be made to the existing system of roads and trails in the planning area under alternative 1. However, continuing current management under alternative 1 would include the use of standard operating procedures and best management practices for routine road and trail maintenance and other routine activities as part of managing the current transportation system.

Forest Service National Best management Practices for Water Quality Management on National Forest System Lands, Volume 1 National Core BMP Technical Guide (BMPs, USDA Forest Service 2012) and the Region 6 General Water Quality Best Management Practices (USDA Forest Service 1988) applicable to road and trail management are incorporated by reference, and are incorporated into the development of mitigation measures for the Sucker Creek Legacy Roads and Trails Project. These best management practices are widely adopted and accepted as being effective in avoiding, minimizing, or mitigating adverse effects to soil, water quality, and instream riparian resources and would be implemented under the action alternative for the Sucker Creek Legacy Roads and Trails Project. A list of the BMPs that are an integral part of implementation are available in appendix B.

Standards and Guidelines and mitigation measures identified in the 1989 Siskiyou National Forest Land and Resource Management Plan, as amended, are required measures and are incorporated by reference.

Cultural Resources

1. If cultural resources are encountered during the course of this project, earth-disturbing activities in the vicinity of the find must be suspended, and a Forest Service Archaeologist or Archaeological Technician notified to evaluate the discovery and recommend the subsequent course of action.
2. In the event that project activities occur outside of road prism, they must be coordinated with a Forest Service Archaeologist or Archaeological Technician prior to initiation.
3. A Forest Service Archaeologist or Archaeological Technician will survey several roads immediately prior to project activities.

Hydrology and Soils

4. A sediment control plan would be developed during the implementation phase for this planning decision; this is a standard best management practice that would be followed.
5. Decommissioned roadbeds and project staging areas are to be left in a condition that prevents channeling of surface flows and allows infiltration suitable for revegetation.
6. Follow the Sucker Creek Legacy Roads and Trails Revegetation Plan for guidance on plant species when using seeding/planting for erosion control and re-establishment of site productivity.
7. During decommissioning and storage activities, unstable road fill slopes will be pulled back adequately to prevent future failure.
8. Stockpile slash generated from vegetation clearing during road decommissioning, storage, and stormproofing activities to scatter over disturbed sites. Seed exposed soils with an appropriate native seed mix, particularly areas with minimal residual slash cover.
9. Before the onset of extended wet weather, install appropriate temporary erosion control measures at incomplete project sites with exposed soil, such as silt fencing or mulch; remove temporary drainage crossings or other temporary obstructions from drainages.
10. Project activities will cease at any time when the travelway of the road is wet and turbid water or fines are observed moving off the road surface to ditch lines that deliver to stream channels, regardless of time of year.

Aquatic Biota[2]

11. Follow the appropriate state (ODFW 2008) or most recent guidelines for timing of in-water work.
12. Ensure that an experienced fisheries biologist or hydrologist is involved in the design of all activities in this project. The experience should be commensurate with technical requirements of a project.

[2] Project design criteria listed here are specific to the Sucker Creek Legacy Roads and Trails Project.

13. The project fisheries biologist/hydrologist will ensure that project design criteria (chapter 2) and reporting are incorporated into implementation contracts. If a biologist or hydrologist is not the contracting officer representative, then the biologist or hydrologist must regularly coordinate with the project contracting officer representative to ensure the project design criteria and conservation measures are being followed.
14. Best management practices to confine vegetation and soil disturbance to the minimum area, and minimum length of time, as necessary to complete the action, and otherwise prevent or minimize erosion associated with the action area.
15. Specific to Road and Trail Erosion Control and Decommissioning includes hydrologically closing or decommissioning roads and trails, including culvert removal in perennial and intermittent streams; removing, installing or upgrading cross-drainage culverts; upgrading culverts on non-fish-bearing steams; constructing water bars and dips; reshaping road prisms; vegetating fill and cut slopes; removing and stabilizing of side- cast materials; grading or resurfacing roads that have been improved for aquatic restoration with gravel, bark chips, or other permeable materials; contour shaping of the road or trail base; removing road fill to native soils; soil stabilization and tilling compacted surfaces to reestablish native vegetation. Equipment such as excavators, bull dozers, dump trucks, front-end loaders, and similar equipment may be used to implement projects.

    Decommissioning

    - For road decommissioning and hydrologic closure projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the extent possible.
    - When obliterating or removing road segments adjacent to a stream, use sediment control barriers between the road and stream if space is available.
    - Dispose of slide and waste material in stable sites out of the flood-prone area. Native material may be used to restore natural or near-natural contours.
    - Drainage features used for stormproofing and treatment projects should be spaced as to hydrologically disconnect road surface runoff from stream channels. If grading and resurfacing is required, use gravel, bark, or other permeable materials for resurfacing.
    - Minimize disturbance of existing vegetation in ditches and at stream crossings.
    - Conduct activities during dry-field conditions (generally May 15 to October 15) when the soil is more resistant to compaction and soil moisture is low.
    - When removing a culvert from a first or second order non-fish bearing stream, project specialists shall determine if culvert removal should include stream isolation and rerouting in project design. Culvert removal on fish bearing streams shall adhere to the measures described in Fish Passage Restoration (National Marine Fisheries Services 2013). See appendix D.
    - For culvert removal projects, restore natural drainage patterns and channel morphology. Evaluate channel incision risk and construct in-channel grade control structures when necessary.
16. Heavy equipment will be commensurate with the project and operated in a manner that minimizes adverse effects to the environment (e.g. minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils).

Heavy Equipment Use

- Fueling and cleaning and inspection for petroleum products and invasive weeds
- All equipment used for instream work will be cleaned for petroleum accumulations, dirt, plant material (to prevent the spread of noxious weeds), and leaks repaired prior to entering the project area. Such equipment includes large machinery, stationary power equipment (e.g., generators, canes), and gas-powered equipment with tanks larger than five gallons.
- Store and fuel equipment in staging areas after daily use.
- Inspect daily for fluid leaks before leaving the vehicle staging area for operation.
- Thoroughly clean equipment before operation below ordinary high water or within 50 feet of any natural water body or areas that drain directly to streams or wetlands and as often as necessary during operation to remain grease free.

17. Existing roadways will be used whenever possible. Minimize the number of temporary access roads and travel paths to lessen soil disturbance and compaction and impacts to vegetation. Temporary access roads will not be built on slopes where grade, soil, or other features suggest a likelihood of excessive erosion or failure. When necessary, temporary access roads will be obliterated or revegetated. Temporary roads in wet or flooded areas will be restored by the end of the applicable in-water work period. Construction of new permanent roads is not permitted.
18. Minimize number and length of stream crossings. Such crossings will be at right angles and avoid potential spawning areas to the greatest extent possible. Stream crossings shall not increase the risk of channel re-routing at low and high water conditions. After project completion, temporary stream crossings will be abandoned and the stream channel and banks restored.
19. Work from top of bank – To the extent feasible, heavy equipment will work from the top of the bank, unless work instream would result in less damage to the aquatic ecosystem.
20. Timely completion – Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible. During excavation, stockpile native streambed materials above the bankfull elevation, where it cannot reenter the stream, for later use.

Sensitive Plants[3]

21. The district botanist will be notified adequately prior to implementation in treatment areas in order to protect and flag sensitive species occurrences.
    a. If implementation is to occur outside of the field season, the implementation schedule should be relayed to Botany specialists in the previous field season to flag sensitive species occurrences.

[3] If any threatened or endangered plant species or Forest Service sensitive plant, lichen, or fungi species are found prior to or during implementation, there will be an amendment to the BE and additional mitigations may be created.

   b. All sensitive plant species will be flagged by RRSNF Botanists prior to implementation and avoided during implementation to prevent direct impacts to any of these species.

22. The district botanist, prior to implementation, would survey all proposed areas that would receive ground disturbing activities. This would include but not limited to: removing or replacing culverts; decommissioning roads; or any other proposed activities that would disturb areas where sensitive species may occur. Surveys would be conducted at the proper time of year to identify any target species.

23. There is an occurrence of Siskiyou phacelia at Portuguese Flat on FS Road 4703521. The road directly past this sensitive plant area is proposed to be decommissioned. For this area:

    a. No project activities would occur within the open sensitive plant occurrence area; this includes staging equipment, any form of decommissioning of this sensitive plant area, and any project implementation within sensitive plant area.

    b. Vehicles, all equipment, implementation tools, and personnel would be restricted to the existing road prism

    c. All equipment would be washed and clean of invasive plant and noxious weed seeds and materials prior to driving through or accessing the road segment slated to be decommissioned.

    d. The district botanist would be notified prior to implementation to flag area and be on site during implementation.

24. There is an occurrence of Lee's lewisia on FS Road 4614435. This road is proposed to be decommissioned. For this road:

    a. No project activities would occur within the Lee's lewisia area including: staging of equipment; any form of decommissioning of this sensitive plant area; and any project implementation within sensitive plant area.

    b. All equipment would be washed and clean of invasive plant and noxious weed seeds and materials prior to driving through or accessing the road segment slated to be decommissioned.

    c. The district botanist will be notified prior to implementation to flag area and be on site during implementation.

25. FS roads 4703051, 4609053, 4611968, and 4611955 are proposed to be placed in to storage. For these roads:

    a. No project activities would occur within the Howell's fawnlily (FS road 4703051 and 4609053) and California globemallow (FS roads 4611968 and 4611955) areas including: staging of equipment; any form of decommissioning of this sensitive plant area; and any project implementation within sensitive plant area.

    b. Culverts may be removed on FS road 4609053; there are two culverts within 310 feet and one culvert within 510 feet of the Howell's fawnlily occurrence. To prevent direct impacts no project activities would occur within sensitive plant areas.

    c. All equipment will be washed and clean of invasive plant and noxious weed seeds and materials prior to driving through or accessing the road segment slated to be placed into storage.

   d. The district botanist will be notified prior to implementation to flag area and be on site during implementation.

26. FS road 4611070 is proposed for decommissioning. This road is within the Bigelow Botanical Area and has infestations of invasive plants (refer to the Sucker Creek Roads and Trails Invasive Plant Risk Assessment). It also serves as a walking trail to access parts of the Botanical Area and trail to Bigelow Lakes. For this road:
    a. Project Lead will consult and work with the district botanist to plan and determine implementation activities that would occur there.
27. Areas that would receive ground disturbing activities would be re-vegetated to maintain native plant diversity, prohibit the spread and introduction of invasive plants, and restore impacted ecosystems
    a. Re-vegetation areas include but are not limited to: culvert replacement, road decommissioning, disturbed areas, creation of bare soil areas, staging areas, canopy removal areas, other areas
    b. Refer to the Sucker Creek Legacy Roads and Trails Re-vegetation Plan

Invasive Plants

28. Forest botanists will be notified adequately (minimum of 2 weeks) prior to any project implementation of each unit to treat and/or properly flag infested areas in field season.
    a. If implementation is to occur outside of field season then schedule should be relayed to botany department in previous field season to adequately treat infestations.
29. Disturbed areas would be re-vegetated to prevent the establishment or spread of invasive plants and noxious weeds. The following areas may be re-vegetated dependent on the requirement and need of each individual site influenced by the activity that would occur at these sites. See the Sucker Creek Legacy Roads and Trails Revegetation Plan in appendix C.
    a. Culvert removal or replacements areas
    b. Areas with vegetation removal and canopy loss
    c. Decommissioned roads
    d. Roads placed into storage
    e. Staging areas
    f. Disturbed areas from project implementation
    g. Areas needing erosion control
30. Project lead would work with the district botanist for all roads proposed for decommissioning with infestations to ensure that infestations are controlled and not spread. Roads proposed for decommissioning with infestations examples below but not limited to:
    a. 4611070 Bigelow Lakes
    b. 4611965 Black Pepper
    c. 4612098 Sucker Creek Extension
31. All WRRD target invasive plants and noxious weed infestations within the project area or along travel routes near the project area will be hand treated where feasible or "flagged and

avoided" according to the species present and project constraints. Roadside invasive plant sites would be flagged and/or staked by the Forest Botanist/Invasive Plant Coordinator. Infested sites will be avoided or the FS contracting officer's representative or other FS representative (representatives may include COR/ER/FSR/SA.) would direct contractor to blade or ditch in a manner that reduces the potential spread from infested to un-infested sites (e.g. blading into instead of through from infestations).

32. All off-road equipment used on this project shall be washed and cleaned before moving into the project area to ensure that the equipment is free of soil, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds. "Off-road equipment" includes all logging and construction equipment (bull dozers, graders, etc.) and such brushing equipment as brush hogs, masticators, and chippers; it does not include log trucks, chip vans, service vehicles, water trucks, pickup trucks, and similar vehicles not intended for off-road use. However, it is recommended that all vehicles, especially large vehicles, are cleaned when they come onto the Forest Service lands or come from a known weed infested area. This is to reduce the potential for spreading invasive plants. In addition, the Forest Service would inspect all off-road equipment prior to entry onto NFS lands.

    a. Wash stations would be created throughout the treatment area in conjunction with Port Orford Cedar (POC) disease control of *Phytophthora lateralis*

    b. Wash stations would be dependent on project implementation locations and invasive species and POC disease restraints present

    c. Wash stations would be dependent on project implementation locations and invasive species and POC disease restraints present Wash stations will follow the design recommended in the Attachment 2: General Specifications for a Washing Station and Equipment Cleaning Checklist FSEIS ROD 2004 Management of Port Orford Cedar. This design will consist of a 6-inch rock lift from the existing road surface and be at least 1.5 times the length of the longest truck used in operations. Water would be caught at the lowest point off of the road in a hole lined with bio mesh that would be disposed of by burning, or bagged and disposed to a landfill to remove any invasive weed seeds.

    d. A wash station may also be a mobile wash station that can be moved from site to site for cleaning of the equipment. The mobile wash station mush use treated water following the below criteria for bleach concentration. Wash station filters would be bagged and disposed of in a landfill to prevent spread or establishment of invasive plant seeds or materials.

    e. All parts of equipment must be clean including the undercarriage and chassis before transport to the project area or between project areas.

    f. Equipment will be considered clean when visual inspection by FS Contracting Officer Representative (or other FS representative) does not reveal soil, seeds, plant material, or other such debris.

    g. When working in known weed infested areas equipment shall then be cleaned before moving to other Forest Service lands that are un-infested or do not contain the same invasive plant species.

33. To be in compliance with the 2005 ROD for managing invasive plants, all earth-moving equipment, gravel, fill, or other materials are required to be weed-free. Use on-site sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from

gravel pits and fill sources that have been surveyed and approved by a RRS botanist/invasive plant coordinator.

34. Landings or staging areas for equipment, materials, or crews will not be sited in invasive plant or noxious weed infested areas.
35. Minimize the amount of ground and vegetation disturbance in the construction areas. Reestablish vegetation where feasible on disturbed bare ground to minimize weed establishment and infestation. Re-vegetation is especially important in staging areas.
36. Use weed-free mulches, and seed sources. Salvage topsoil from project area for use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-natives such as *Phleum pratense* (cultivated timothy), *Dactylis glomerata* (orchard grass), or *Lolium spp*. (ryegrass) will not be used. This requirement is consistent with the Forest Service Manual 2000 (Chapter 2070-Vegetation Ecology) policy that directs the use of native plant material for re-vegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems". Seed mixes must be approved by District Botanist.
37. Soil moved from an infested site would be disposed of at designated site coordinated by engineers and the District Botanist /Invasive Plant Coordinator.
38. After the project phase is completed the district botanist must be notified so that the project area can be monitored for 3 years subsequent to project implementation to ensure additional invasive plant species do not become established in the areas affected by the project and to ensure that known weeds do not spread. Monitoring will result in early detection and treatment of invasive plant sites, thus reducing the cost of treatment and the long-term environmental impacts of invasion.
    a. All disturbed sites including: culvert replacement and removal; decommissioned roads; landings; wash station sites; exiting infestations; and other project implementation areas would be monitored
39. Any new invasive plants found in the project area will be documented and the Wild Riversdistrict botanist will be notified of the infestation location.

Revegetation Requirements

40. Areas that would receive ground disturbing activities would be revegetated to maintain native plant diversity, prohibit the spread and introduction of invasive plants, and restore impacted ecosystems
    a. Revegetation areas include but are not limited to: culvert replacement, road decommissioning, disturbed areas, creation of bare soil areas, staging areas, canopy removal areas, other areas.
    b. Refer to the Sucker Creek Legacy Roads and Trails Revegetation Plan (appendix C).
41. Culvert replacement and removal areas would be re-vegetated with the riparian native tree, shrub, forb, or grass species listed.

a. Resistant Port Orford cedar would be used at least 25 feet above the stream and 25 feet between seedlings to prevent spores migrating with water into their root system.(approximately 70 trees/acre).

b. Other riparian tree and shrub species can be planted in disturbed areas and to the stream channel.

c. Tree and shrubs will be planted in all disturbed areas to minimize soil erosion into stream channel and provide bank stability. Grass and forbs could be utilized for appropriate site needs.

42. Decommissioned roads would be seeded with the appropriate native grass seeds and/or trees and shrubs.

    a. The first 100 feet or wherever there is ripping and re-contouring would be seeded with native grass seed.

    b. Areas with slopes over 45 percent may be seeded with native grass seed and mulched with weed free mulch and/or planted with the appropriate trees, shrubs, or herbs for the habitat.

    c. If road is ripped and re-contoured beyond the first 100 feet trees, shrubs, forbs, and grass seed may be planted.

43. Staging areas or other disturbed areas would be planted with the appropriate tree, shrub, herb, or grass species dependent on habitat, soils, elevation, and disturbance area.

44. Plant resistant stock POC in their respective planting zones. Follow the breeding zone map for stock placement. Plant resistant stock only in un-infested sites where POC normally occurs. Space POC seedlings 25 feet from water sources and 25 foot spacing.

Port Orford Cedar

45. Schedule project activities during the dry season: June 1 – September 30.

46. Conduct work on roads where *P. lateralis* is not present before working on sites that are infested. The following table lists roads within the analyses area that have Port Orford cedar infested with *P. lateralis* along with proposed treatments.

Forest Service Road	Proposed Treatment
4600000, 4600105B, 4600112, 4609000, 4611000, 4611063, 4611070, 4611079, 4612000	Stormproof
4611988	Storage
4612069	Decommission

47. Use uninfested water sources for planned activities such as equipment washing, road watering, and other water-distribution needs, or treat water with Ultra Clorox®, at a rate of 1 gallon of bleach/1000 gallons of water.

48. Designate ingress and egress routes to minimize exposure to PL.

49. Resistant POC Planting: Site specific based on uninfected areas where the proposed action treatment for a road is either storage or decommission (Revegetation Plan appendix C).

50. Washing project equipment:

a. Wash project equipment before entering National Forest land the first time in the work period. Wash equipment again before entering National Forest lands if work is halted and equipment is taken to another job site or for any reason equipment is taken to another job site away from this project.

b. Wash project equipment, work boots and any hand tools after working in each area where PL is already known to be present and before working on the next scheduled site.

c. Wash stations will be established through coordination with the botanist and the contract inspector on the project.

d. Wash stations would follow the design recommended in the *Attachment 2: General Specifications for a Washing Station and Equipment Cleaning Checklist* POC FSEIS ROD 2004. This design will consist of a 6-inch rock lift from the existing road surface and be at least 1.5 times the length of the longest truck used in operations. Water would be caught at the lowest point off of the road in a hole lined with bio mesh that would be disposed of by burning, or bagged and disposed to a landfill to remove any invasive weed seeds.

e. A wash station may also be a mobile wash station that can be moved from site to site for cleaning of the equipment. The mobile wash station mush use treated water following the below criteria for bleach concentration. Wash station filters would be bagged and disposed of in a landfill to prevent spread or establishment of invasive plant seeds or materials.

51. Rout new trails (off-highway vehicle, motorcycle, mountain bike, horse, and foot) away from areas with POC or PL, or provide other mitigation such as seasonal closures. Trailheads will be relocated and/or established trails will be rerouted in the same matter where trails present significant risk to POC, or provide other mitigation such a site hardening.

52. In the case of a summer rain event, apply permit or contract clause or otherwise require cessation of operations when indicators such as puddles in the roadway, water running in roadside ditches, or increase in soils moisture (as by moisture meter or equivalent) indicate an unacceptable increase in the likelihood of spreading PL.

Wildlife

Spotted Owl

53. Work activities (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, prescribed fire, muffled blasting) that produce loud noises above ambient levels, or produce thick smoke that would enter the stand, will not occur within restricted distances of any spotted owl nest site or activity center of known pairs and resident singles, unsurveyed suitable NRF habitat between 1 March and 30 June (or until two weeks after the fledging period) – unless protocol surveys have determined the activity center or NRF habitat to be not occupied, non-nesting, or failed in their nesting attempt. The restricted zone is 1.0 mile for any unmuffled blasting. This distance may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the blast and nest sites. March 1 – June 30 is considered the critical early nesting period; the action agency biologist has the option to extend the restricted season during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt). The boundary of the prescribed area may be modified by the action agency biologist using

topographic features or other site-specific information. The restricted area is calculated as a radius from the assumed nest site (point).

Restricted distances are calculated as:

- less than or equal to1 mile for blast of more than 2 lbs. of explosive;
- less than or equal to 1/4 mile for Type I or II helicopters;
- less than or equal to120 yards for blast of less than 2 lbs. of explosive and Type III-IV helicopters or single-engine airplanes;
- less than or equal to 65 yards for chainsaws;
- less than or equal to 60 yards for impact pile driver, jackhammer, or rock drill;
- less than or equal to 35 yards for heavy equipment.

54. Designated Critical Habitat for Northern Spotted Owl**:** Trees cut within designated habitat for the northern spotted owl (KLW-4) as roadside hazards or for drainage improvement at culvert sites will either be left on-site in riparian reserves or distributed within the designated critical habitat to serve as primary constituent elements of critical habitat. Excess of this material could be hauled off-site and utilized in stream restoration projects, needs in other late-successional reserve locations that are deficient in downed wood for wildlife, or for other special wood products such as firewood.

55. If an active spotted owl nest or activity center is located within or adjacent to a project area, delay the project activity until September 30th or until an action agency biologist determines that young are not present. For a given situation, the "adjacent" distance is determined by the action agency biologist – if needed, contact Level 1 team for guidance. If any project activity is so close to a known or suspected owl site that the disturbance would flush a nesting spotted owl, curtail the project activity until September 30. The field biologist has the discretion to conduct surveys and determine fledging activity.

Snag-dependent Species

56. To the extent compatible with safety provisions retain all snags with tree diameter greater than or equal to10 inches. Retain on site, all commercial size down-woody material. "Leave-trees" damaged during project operations will be left on site. The intent is to maintain or minimize the loss of existing snag numbers following all treatment activities. All snags felled for safety will remain on-site. Excess of this material could be hauled off-site and utilized in stream restoration projects, needs in other late-successional reserve locations that are deficient in downed wood for wildlife, or for other special wood products such as firewood.

Black Salamander, Del Norte Salamander, Foothill Yellow-legged Frog, Northwestern Pond Turtle

57. Any salamanders, frogs or turtles found during culvert work would either be left unharmed or moved to suitable moist, shaded habitat adjacent to but undisturbed by the work site if there is potential for harm.

Siskiyou Short-horned Grasshopper

58. To the extent possible, avoid disturbance or removal of blue elderberry from roadsides, road prisms to be decommissioned, and culvert locations.

Migratory Birds

59. Avoid disturbance of any active bird nests during project activities. To the extent possible, avoid any activities within 328 feet of active bird nests until young have left the nest.

Late-Successional Reserves

60. Trees cut within the East IV LSR as roadside hazards or for drainage improvement at culvert sites would be left on-site in riparian reserves or distributed in the LSR for down woody material. Excess of this material could be hauled off-site and utilized in stream restoration projects, needs in other late-successional reserve locations that are deficient in downed wood for wildlife, or for other special wood products such as firewood.

Cultural Resources

61. In the event that project activities occur outside of the area defined in the heritage resource inventory schema, they must be coordinated with the Forest Archaeologist or Archaeological Technician prior to initiation.
62. Should heritage resources be discovered as a result of any project activities, earth-disturbing activities must be suspended in the vicinity of the find, in accordance with federal regulations (NHPA and 36 CFR 800). The Forest Archaeologist or Archaeological Technician must be notified to evaluate the discovery and recommend a subsequent course of action.

Recreation

63. Mitigation measures to reduce the impacts to recreational users may include advance notice of closures (website, press releases, and postings), signing at appropriate locations, alternative route recommendations, notification of user groups, and timing activities outside of the season of highest recreational use.
64. Contractors would be required to set up project operation warning signs. Prior to implementation, site-specific public safety plans would be developed.
65. When possible, road closures will not exceed 30 minutes.

Alternatives Considered, but Eliminated from Detailed Study

Federal agencies are required by the NEPA to rigorously explore and objectively evaluate a reasonable range of alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action during scoping provided suggestions for alternative methods of achieving the purpose and need. Some of these alternatives are outside the scope of the Sucker Creek Legacy Roads and Trails Project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. These are:

- **Decommission NFS Road 4611 in sections 27, 35, and 36** – One commenter suggested that FS Road 4611 be decommissioned in sections 27, 35, and 36 to reduce risk of impacts to Coho salmon. The ID team considered but eliminated this alternative from detailed study because this is a paved backbone system road that is needed to access private land, and for land management, fire suppression, and recreation access.
- **Put a stream crossing on NFS Road 4611-910** – NFS Roads 4611-910, 4611-912, and 4611-914 will be needed in the future to access Matrix land. However, the bridge on NFS Road 4611-910 near its junction with 4611-019 has been blown out. The ID team

considered but eliminated from detailed study the alternative of putting a bridge in at this time because there is no immediate need to access this area; putting the road into storage will meet current management needs. Constructing a bridge at this site could be an option in the future to access Matrix land.

- **Connect NFS Road 4611-912 to 4611-019** – As mentioned above, NFS Roads 4611-910, 4611-912, and 4611-914 will be needed in the future to access Matrix land. The ID team considered but eliminated from detailed study the alternative of connecting NFS Road 4611-912 to 4611-019 along the boundary between sections 16 and 21, Township 39 South, Range 6 West. The ID team determined that this alternative is not feasible at this time because it would require purchasing a right-of-way easement to construct a portion of the road on private land.
- **Do not decommission NFS Road 4613-066** – One commenter brought up a concern that NFS Road 4613-066 is used by many local hunters. The ID team considered but eliminated this alternative from detailed study because similar access to the area is provided by NFS Roads 4600 and 4613. Non-motorized recreational access would still be maintained under the modified proposed action.
- **Decommission NFS Road 4612-080 and its spur roads past Deep Creek (NFS Roads 4612-467, 4612-475, 4612-741, 4612-485, 4612-486, 4612-487, and 4612-490)** – One commenter suggested that NFS Road 4612-080 and its spur roads be decommissioned past its intersection with Deep Creek to address sediment delivery concerns and impacts to Coho salmon. The option of decommissioning several spur roads (NFS Roads 4612-467, 4612-475, 4612-472, 4612-485, 4612-486, and 4612-490) off of NFS Road 4612-080 is analyzed as part of alternative 2 in this EA. The ID team considered but eliminated this alternative of decommissioning NFS Roads 4612-080 (past Deep Creek) and 4612-487 from detailed study because these roads are needed to access Matrix land and provide access for fire suppression.
- **Decommission NFS Road 4612-540 past Yew Creek** – One commenter suggested that NFS Road 4612-540 be decommissioned past its intersection with Yew Creek. The option of decommissioning NFS Road 4612-5400 is analyzed as part of alternative 2 in this EA. The ID team considered but eliminated this alternative from detailed study because this road is needed to access to Matrix land and provide access for fire suppression.
- **Do not decommission NFS Road 4703-521** – One commenter brought up a concern that NFS Road 4613-521 could be used as an escape route to the Happy Camp, CA road in case of a forest fire. The ID team considered but eliminated this alternative from detailed study because similar access to the area is provided by NFS Roads 4703 and 4812-530. Non-motorized recreational access would still be maintained under the modified proposed action.
- **Reopen roads decommissioned in the past in the Sucker Creek drainage for mining claim access** – Reopening road that were decommissioned in the past would not meet the purpose and need for this project to reduce the risk of National Forest System road-caused sediment delivery to streams in the 5th field Sucker Creek watershed.

Monitoring

Monitoring for both implementation (whether the project was implemented as planned) and effectiveness (whether overall management objectives were met) would occur. Forest Service personnel would conduct monitoring in areas that have the highest probability of showing effects. The following monitoring would occur if an action alternative is implemented.

Project activities: Project design criteria and mitigation measures would be incorporated into contracts and subject to inspection. While project activities are occurring, the Forest Service contracting officer representative (COR) or the designated project inspector would monitor activities to ensure that prescribed project design, mitigation measures, and seasonal restrictions are implemented appropriately. For example, the inspector would monitor the weather and stop operations if turbid water is observed moving off the road surface and into streams. Inspectors would also ensure vehicles are washed prior to entering the project area. Project inspectors and physical scientists would evaluate erosion control methods prior to completion of the project.

Port Orford cedar: The project inspector would insure compliance with the contract that would include the appropriate disease control prescriptions. This includes the entire project area and travel routes.

Forest-level POC monitoring is ongoing as follows:

- Healthy and diseased stands have been identified. Past aerial photography and intensive sampling has been conducted and recorded in GIS. Site-specific surveys have been conducted during field reconnaissance for this project. Summaries of disease status and the use of control strategies will be completed and reported to the Forest level for completion of their annual report that coincides with the interregional summary and report.
- The USDA-FS Southwest Oregon Forest Insect and Disease Service Center continues to evaluate and coordinate existing management techniques to reduce the occurrence of *P. lateralis* and retain healthy Port Orford cedar.
- Sampling of uninfested 7th field watersheds would occur by baiting *P. lateralis* with nonresistant POC seedlings to validate uninfected status post treatment activities.

Fish: The project biologist would ensure that design criteria and conservation measures are incorporated into any implementation contract agreements. If a biologist is not the COR, then the biologist must regularly coordinate with the project COR to ensure the design criteria and conservation measures are being followed.

Soils: Erosion control methods and effective ground cover would be monitored and assessed.

Botany: District botanists would monitor the effects of the project implementation on sensitive plant occurrences. They would assess the effectiveness of design criteria and if the criteria were implemented properly. Botanists would document any decline in species viability due to project activities.

Native plant revegetation: District botanists would monitor revegetation of disturbed areas for survival success of planted species, effectiveness of preventing invasive species, effectiveness of preventing soil erosion, and effectiveness of bank stabilization.

Invasive plants: Known invasive infestations and implementation-caused disturbed areas would be monitored by the District botanists. Monitoring would include detecting new infestations in disturbed areas and the spread of invasive plants from known infestations. Areas would be monitored for 3 years post implementation and infestations would be treated.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in table 5 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 5. Comparing the estimated key quantitative differences between alternatives

Indicators	Alternative 1 (no-action)	Alternative 2 (modified proposed action)
Miles of National Forest System road	180	149
Miles of open NFS road (ML 2-5)	167	118
Miles of closed NFS road (ML 1)	13	31
Miles of road stormproofed	7	118
Miles of road decommissioned	0	28
Miles of road put into storage	0	31
Miles of road converted to trail	0	3
Total road density	2.6 miles of road / square mile	2.2 miles of road / square mile
Number of road stream crossings	480	380
Percent of roads within 300 feet of streams	38%	33%
Potential sediment delivered to streams (cubic yards)	245,000	95,000
Acres of accessible Matrix land	2495	2443
Estimated cost to maintain road system	$396,360	$259,836
Acres of soil productivity restored	0	90
Miles of road traversing 45%+ slopes with reduced risk of failure over time	0	98
Additional Risk of spread of *P. lateralis*	None	Low
Miles of motorized trails	6	6
Miles of motorized mixed use roads	151	126
Miles of non-motorized trail	25	28

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Chapter III. Affected Environment and Environmental Consequences

Introduction

Chapter III summarizes the physical, biological, social, and economic environments of the project area and the direct, indirect, and cumulative effects of implementing each alternative on these environments. The effects disclosed have considered the effectiveness of the mitigation measures outlined in chapter II. Chapter III complies with the implementing regulations of the National Environmental Policy Act (NEPA) for analytic and concise environmental documents (40 CFR 1500-1508).

In the development of the environmental analyses that follow, credible science was considered and is documented in the project record for each resource area. Consistency with the Siskiyou National Forest Land and Resource Management Plan, as amended (Siskiyou Forest Plan) was built into the project design and the analyses. The environmental analyses incorporate issues identified through the scoping process. An environmental effect, impact, or consequence is defined as a modification of or change in the existing environment brought about by the action taken. The NEPA defines these effects as:

- **Direct effects** – are caused by the action and occur at the same time and place.
- **Indirect effects** – are caused by the action but occur later in time or further removed in distance, but are still reasonably foreseeable.
- **Cumulative effects** – are those that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions.

NEPA regulations (40 CFR 1508.27) refer to effects that are direct, indirect, or cumulative as short term or long term. For this project, short term is defined as around 1-10 years and long term is defined as around 10-20 years, unless otherwise defined in the resource sections of this chapter. Effects can vary in degree, ranging from only a slightly discernible change to a measurable alteration in the environment.

Cumulative Effects

A cumulative effect is the impact to the environment resulting from the incremental impact of the action when added to effects from other past, present, and reasonably foreseeable future actions. Other actions are considered regardless of what agency or person undertakes such other actions and regardless of land ownership on which the other actions occur (40 CFR 1508.7). An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other actions, the effects may be significant.

Cumulative effects were assessed for this project in terms of how the alternatives would add to the past, present, and future activities. Existing conditions described under each resource section reflect the cumulative effects of past and present activities that have occurred in this area. Each resource section identifies specific past and present actions with a discernible effect on a particular resource as reflected in the existing condition. Only those past, present, and reasonably foreseeable actions that overlap the geographic analysis area boundary for each particular resource area are considered, and only if those other actions are expected to have overlapping effects with the Sucker Creek Legacy Roads and Trails Project. Some past actions may still be having effects on one resource, but not another. Each resource area considered different mixes of these actions, depending on the cumulative effects boundary for the resource area and resource affected.

This cumulative effects analysis does not attempt to quantify the effects of every past human action. There are several reasons for not taking this approach. First, an exhaustive catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. By looking at current conditions, we are sure to capture the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Second, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the CEQ issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.”

Climate Change

Introduction

Projected global climate change impacts include air temperature increases, sea level rise, changes in the timing, location and quantity of precipitation, and increased frequency of extreme weather events such as heat waves, droughts, and floods. These changes will vary regionally and affect renewable resources, aquatic and terrestrial ecosystems, and agriculture. While uncertainties will remain regarding the timing and magnitude of climate change impacts, the scientific evidence predicts that continued increases in greenhouse gas emissions will lead to increased climate change.

In the summer of 2008, the University of Oregon Climate Leadership Initiative, in partnership with The National Center for Conservation Science & Policy and the MAPSS Team at the U.S. Forest Service Pacific Northwest Research Station, initiated a project to assess the likely consequences of climate change for the Rogue River Basin. A panel of scientists and land managers then assessed the likely risks posed by changing climate conditions to natural systems and made recommendations for increasing the capacity of ecosystems and species to withstand and adapt to those stressors.

Based on the analysis of the risks to natural systems, the policy panel identified as one of the main risks in relation to infrastructure in the Rogue Basin, the potential for increased disruption and direct damage to transportation systems from more flooding. In response to this risk, the policy panel made recommendations in regard to the infrastructure.

In relation to the Sucker Creek Project these include:

- Link public transportation systems as much as possible to facilitate movement of people and equipment in emergency situations.
- Expand road upgrading and maintenance to prevent wash outs during major storms and floods.

The Forest is reviewing and implementing these recommendations as opportunities arise during the planning of road upgrades and maintenance activities.

Analysis Framework

There are two types of climate change effects for proposed projects to consider, as appropriate:

- The effect of a proposed project on climate change (greenhouse gas emissions and carbon cycling).
- The effect of climate change on a proposed project.

Consideration was given as to whether some element of the modified proposed action would result in direct, indirect, or cumulative effects on greenhouse gas emissions or the carbon cycle and the direction of effects (e.g., increase, decrease, or combination of both). Scoping was used to determine if climate change issues are specifically related to this proposal. The Interdisciplinary Team did not identify potential for a cause-effect relationship between this proposal and climate change.

Direct and Indirect Effects

Many proposed projects and programs would emit greenhouse gases (direct effect) and, thus, contribute to the global concentration of greenhouse gases that could affect climate (indirect effect). Since greenhouse gases mix readily into the global pool, it is not currently possible to ascertain the effects of emissions from single or multiple projects.

Also, because Forest Service projects are extremely small in the global atmospheric CO2 context, it is not presently possible to conduct quantitative analysis of actual climate change effects based on individual or multiple projects.

The modified proposed action was determined to be of such a minor scale at the global or even regional scale, that the direct effects would be inconsequential. The direct and indirect effects regarding these relationships are insignificant because there would be very minimal amounts of vegetation (no trees of any substantial diameters), and disposal of brush and slash associated with trail clearing or maintenance would be very minor under all alternatives.

Cumulative Effects

As greenhouse gas emissions are integrated across the global atmosphere, it is not possible to determine the incremental cumulative impact on global climate from emissions associated with any number of particular projects. Nor is it expected that such disclosure would provide a practical or meaningful effects analysis for local project decisions. Uncertainty in climate change effects is expected since it is not possible to meaningfully link individual project actions to quantitative effects on climatic patterns.

It is recognized that global climate change may affect human health, that there is scientific controversy surrounding the effects of human activity on climate change, that there is uncertainty and unknown risks associated with global climate change. The ultimate effects on climate change are indeed the results of incremental cumulative effects of many actions, most of which are outside of Forest Service control.

Recreation

Introduction

Two types of recreation sites are available in the watershed: developed (established facilities) and dispersed (scattered, undeveloped areas). The developed sites are used more than dispersed sites.

Grayback/Sucker is the only watershed on the Siskiyou side of the Rogue River-Siskiyou National Forest where developed recreation predominates. Several small, undeveloped campsites are dispersed throughout the watershed. Some of these have been used since the late 1800s.

The Oregon Caves were discovered in 1873 by Elijah Davidson. In 1909, 480 acres were set aside as the Oregon Caves National Monument. The monument is managed by the United States Department of Interior National Park Service. Visitor use to the monument gradually decreased from approximately181,000 people in 1977 to about 100,000 in 1993, however recently visitor use has increased. In the 1970s most of the visitors were from non-western states; in more recent years, almost all visitors are from Oregon, Washington and California (Oregon Economic Development Department, 1994).

Affected Environment

Five developed campgrounds are found within this watershed: Bolan Lake, Cave Creek, Grayback, Chinquapin (including the historic Cedar Guard Station site of the early CCC camp), and the Country Hills Resort. The first four campgrounds are managed by the Forest Service and are the only developed campgrounds on the Wild Rivers Ranger District. Country Hills Resort is privately owned.

The Forest Service campgrounds provide vehicle access and parking, tent pads, firepits, and toilet facilities. Grayback and Bolan Lake are accessible to recreational vehicles. Further, the Grayback Campground is accessible to people with disabilities. It also includes an interpretive trail. Camping, picnicking, swimming and hiking are the most popular activities in the campgrounds. Forest Service campgrounds, with the exception of Bolan Lake Campground, and private campground serve as overnight facilities for people in route to the Oregon Caves National Monument.

Wilderness, Backcountry and Botanical Areas

Several areas in the Grayback/Sucker watershed provide for dispersed recreation, however, the influx of large numbers of people in the area and motorized vehicle use cause environmental concerns. The Red Buttes Wilderness—about 3,500 acres of which are in Sucker Creek and includes the Tanner Lakes and the Boundary Trails—are popular destinations within the wilderness.

The trail system in the watershed evolved from Aboriginal Indian trails. These trails were further developed by early settlers to serve isolated homesteads and mining areas. Following the creation of the Siskiyou National Forest in 1906, many administrative trails were developed primarily for fire protection purposes. As development of the area progressed, many miles of trails were replaced with administrative, mining and timber sale roads. Recreational use of the still existing trails has been growing and now constitutes the primary use of the trail system.

The Boundary Trail crosses two Ranger Districts (Wild Rivers and Siskiyou Mountains) and the Red Buttes Wilderness. The Boundary Trail is designated as a National Recreation Trail. High Divide Backcountry Recreation Area is adjacent to the wilderness. Approximately 2,300 acres are designated "Motorized Backcountry" (Siskiyou National Forest LRMP IV-97). Most of the use is concentrated on primitive roads, jeep and hiking trails, and dispersed campsites.

Three botanical areas are found in the watershed: Bolan Lake, Bigelow Lakes, and Grayback Mountain (see Siskiyou National Forest LRMP Appendix F, Volume I, F-55, 60, 88 for descriptions of the areas). Mount Elijah is a popular destination for hikers in the Bigelow Lakes

Botanical Area. Views from the peak are expansive; it and other peaks are considered sacred sites for many people.

Environmental Consequences

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

The recreational experience would remain the same and number of visitors would not potentially change. There would be no direct, indirect or cumulative effects to recreation under this alternative because no project activities are proposed.

Alternative 2 – Modified Proposed Action

Direct, Indirect and Cumulative Effects

Recreational opportunities would be enhanced with the addition of 3 miles of new trail. No access to developed or dispersed recreation sites would be eliminated by implementation of road decommissioning, stormproofing or storage through this project. The conversion of roads to trails will remove several road stream crossings, which will reduce the potential for future sediment delivery from road failures. Therefore, no adverse cumulative effects are anticipated from this project when combined with any past, ongoing or reasonably foreseeable future activities.

Red Buttes Wilderness Trail Expansion #1237

The new trail would be developed from the conversion of the 4612098 road into trail. This new trail would be the Sucker Creek Tie Trail# 1237A, adding 1.7 miles of new trail to the existing 0.4 miles. It would provide easier access for equestrian use. This Sucker Creek Tie Trail would give improved access from the trailhead to the Red Butte Wilderness. The existing Sucker Creek Trail #1237 in the wilderness contains stream crossings that are challenging for horses and can cause erosion. The new section of the Sucker Creek Tie Trail would have improved stream crossings for horses and reduce the potential for erosion. The new trail system would provide access deeper into the wilderness and creates a new loop system.

Lake Mountain Bigalow Lakes Trail #1214 and the Mt. Elijah Tie Trail 1206A

The new trail would be developed from the conversion of the 4611070 road into trail. This would add 1.4 miles of new trail to the existing trail system. A new developed trail head would be constructed at the beginning of the road conversion adding equestrian trailer turn-around and parking. This trail system is an important loop system that connects to Mt. Elijah, Oregon Caves and the Boundary Trail.

Visuals

The scenic resources on the Rogue River-Siskiyou National Forest were inventoried under the Forest Service's Visual Management System (VMS) during the late 1970s and have been updated as specific projects were identified. This motorized vehicle use designation project is analyzed utilizing the VMS in order to maintain the integrity of the original inventory and established Visual Quality Objectives (VQOs).

Introduction

The Siskiyou Forest Plan (1989) states that management activities shall be designed to achieve the allocated Visual Quality Objective (VQO) for the area. The Northwest Forest Plan indicated that VQOs identified in current Forest Plans would remain. Most land allocations in both the Siskiyou Forest Plan and Northwest Forest Plan can be related to each other. VQOs attached to the land allocations in the Siskiyou Forest Plan, as amended by the Northwest Forest Plan, are now considered the legal minimums for managing the scenic resources.

In 1995, the Scenery Management System was implemented and supersedes the Visual Management System which was utilized and incorporated into the Siskiyou Forest Plans (1989). Both systems have maintained and enhanced the visual character of National Forests and Grasslands since 1974. The newer Scenery Management System, also referred to as Landscape Aesthetics, is a further refinement for integrating the benefits, values, desires, and preferences regarding aesthetics and scenery for all levels of land management planning on the Forest.

Implementation of all projects on the Rogue River-Siskiyou National Forest will incorporate the Scenery Management System. Although, very similar, the Visual Management System is utilized for the effects analysis of road stormproofing, decommissioning, closure, and conversion to trail on scenic quality for Forest settings.

Affected Environment

Portions of the Forest are visible from several important viewpoints within the Sucker Creek watershed, in particular along the Caves Highway (FS Road 4600), other Forest roads and trails.

The majority of the visual land allocations in the Sucker Creek watershed are to retention and partial retention. The management goal for these areas is to conduct activities in such a way that they are subordinate to the character of the landscape and not evident to the casual forest visitor (USDA Forest Service 1989, pages 4-66 to 4-143).

Environmental Consequences

Effects Mechanisms and Analysis Framework

The analysis area to assess direct, indirect, and cumulative effects is confined to the Sucker Creek project planning area. This is an appropriate space since the analysis is focused on how well activities from the modified proposed action alternative would meet the project planning area's assigned VQOs for affected land allocations.

Alternative 1 – No Action

Direct and Indirect Effects

The scenic quality of the Sucker Creek watershed would not be directly affected by alternative 1. The existing condition would persist with no road stormproofing, decommissioning, storage or conversion to non-motorized trail.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

The scenic quality of the Forest could be directly affected by alternative 2 (modified proposed action). Stormproofing approximately 118 miles of road and converting approximately 3 miles of road to trails would involve minor direct impacts related to simple maintenance since the travelway already exists. The 31 miles of road that would be put into storage under alternative 2 would also experience these minor impacts in the future when they are reopened for management or emergency access.

Decommissioning approximately 28 miles of road would indirectly affect the scenic quality of the Forest. A short section at the beginning of each decommissioned road would be outsloped or blocked with another type of barrier to deter illegal use of the road. In the long term, planting or natural reestablishment of vegetation on these roadbeds would help develop a more natural appearance.

Cumulative Effects

Alternative 2 would not result in substantive cumulative effects to the visual resource. While, alternative 2 would remove a few small diameter trees and incur a minimal amount of brushing during road maintenance, these actions would be insignificant and visually unnoticeable. Therefore the effects of the alternative would not combine with past, present, or foreseeable future projects to warrant an adverse cumulative effect to visuals or scenic quality.

Fire and Fuels

Introduction

The Siskiyou National Forest Land and Resource Management Plan (1989), as amended by the 2010 Fire Amendment for the Rogue River-Siskiyou National Forest, states that we will manage wildland fire in a cost-efficient, timely, and safe manner consistent with land management objectives and fire management direction. In that amendment, we are directed to use wildland fire to obtain and enhance the ecological characteristics of the area when warranted by conditions.

Affected Environment

Fire Risk

Open, drivable roads play a role in fire management providing access to fires for initial attack fire suppression. Roads are used as suppression lines and anchor points. They also can serve as ingress/egress routes for firefighters during active fires. Currently, road maintenance funding has declined and many roads are becoming non-drivable because seasonal damage is not repaired. Unmaintained, non-drivable roads that have the road profile or template intact can be reopened for extended attack fire suppression and to access areas for forest restoration projects.

Lightning occurs in the Sucker Creek drainage area on a low to moderate frequency with usually one, sometimes two, lightning storms passing through during the summer months, usually in July and August. Typically, but not exclusively, lightning-caused fires occur on ridgetops and upper portions of the slopes, burn with low to moderate intensity, and are relatively easy to suppress. Normal size at control is predominantly less than 0.25 acre.

Human-caused fires in the area occur with more frequency than lightning fires and typically start along the roads. These fires usually range from small to large in size, with corresponding intensity and difficulty to suppress.

As with any fuel type on the Wild Rivers Ranger District, high to extreme conditions can result in extreme fire behavior with rapid rates of spread and stand replacement characteristics. Historically road access has not made a significant difference in initial attack success under these conditions.

Fire Occurrence

Fire occurrence is the average number of fires in a specified area during a specified time. The 10-year average for Sucker Creek is three fire starts with no recent history of large fires, although this fuel type will support large fires in high to extreme fire danger conditions. When initial attack is successful, fire size is usually less than 0.25 acres.

Environmental Consequences

Alternative 1 – No Action

There would be no change in the level of maintenance to roads in the Sucker Creek watershed under the no action alternative. Unmaintained roads would continue to deteriorate through storm damage and the growth of vegetation within the road travel way. This would mean the continuation of a slowly declining level of road access for immediate initial attack fire suppression as vegetation grows and roads close themselves. Most roads would remain available for hazardous fuels reduction projects, though some may require repair before use.

Alternative 2 – Modified Proposed Action

Proposed activities for the modified proposed action would reduce some available road access for initial attack fire suppression; however, travel corridors for fire suppression would be maintained throughout the watershed. Decommissioned roads would still provide foot access, but would eliminate motor vehicle access. Roads put into storage would be made available if there is a need during extended fire operations, and would require heavy equipment to reopen them. Stored ridgetop roads would continue to serve as a fire barrier. Mid-slope roads historically provide little impediment to fire spread during high fire danger in this terrain and fuel type. Although decommissioning roads would reduce access for initial attack fire suppression, aerially delivered firefighting resources such as helitack crews, helicopter rappellers and smokejumpers could provide an initial attack fire suppression response in those areas when needed. Therefore, no effects to fire and fuels are expected from this project.

Cumulative Effects

There would be no effects on fire and fuels from project activities, so there would be no cumulative effects.

Cultural Resources

Introduction

Protection and management of heritage resources is mandated by federal laws and regulations identified in the cultural resources report and incorporated by reference here for this project.

Cultural resource information required for planning projects includes an inventory (existing record review and usually a field survey), and consultation with the State Historic Preservation Office (SHPO), Indian tribes, local governments, and other interested parties (36 CFR 800.2(c)).

Affected Environment

The Sucker Creek watershed lies within the aboriginal territory of the Confederated Tribes of the Grand Ronde Community of Oregon and the Confederated Tribes of the Siletz. The project proposal was submitted to these tribes to solicit concerns during the planning phase under a government-to-government relationship. No concerns were raised, and no traditional cultural properties were identified that would be affected by the modified proposed action alternative

In preparation for the proposed project, a search of Heritage Program reports and site records, and application of the Forest's GIS Heritage layer to the project area, found no recorded cultural sites within the project area. However, some of the roads slated for decommissioning may lead to, or cross over, existing historic mining-related features where there is a possibility of undocumented sites being discovered during field reconnaissance.

Environmental Consequences

Effects Mechanisms and Analysis Framework

Effects mechanisms serve as tools to quantify effects and offer a basis for comparing the effects of management practices. Since there are currently no known sites within the proposed project activity areas, possible effects of the proposed action on cultural resources are discussed qualitatively, and overall risk is reported in general terms.

The analysis area for cultural resources is confined to the road prisms of road segments proposed for treatment. This has been deemed appropriate since the level of risk to the area's cultural resources is directly tied to management practices proposed in this project.

The analysis of environmental consequences is based on the assumption that the project design criteria and mitigation measures listed in chapter 2 for cultural resources would be applied during implementation.

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

Under alternative 1, no project activities are proposed, therefore, there would be no direct effects to cultural resources. Any as yet undiscovered sites would likely remain undisturbed, although there is low potential for indirect and cumulative effects relating to daily use of the forest, domestic animal and wildlife activities, natural deterioration, scavenging/artifact collection, and catastrophic events such as fire, flood, and landslide. For example, should a road failure cause extensive erosion through a site.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Project activities (discussed in chapter 2) would primarily occur within the already heavily impacted existing road prisms of roads proposed for treatment. Thus, the potential for direct or indirect effects impacting unknown cultural resources is low. However, should any previously unknown sites be found during ground disturbing activities, activity near the find would be suspended and a Forest Service Archaeologist or Archaeological Technician would be notified to evaluate the discovery and recommend the subsequent course of action.

If any sites are encountered in the course of additional inventory or during project implementation, Forest specialists would consult with the State Historic Preservation Office, as required by law, to determine the significance of the discovery and potential effects of the project. The Confederated Tribes of the Grand Ronde Community of Oregon and the Confederated Tribes of the Siletz would be included in these discussions if Native American sites are involved. Mitigation would be applied and may include avoidance of the sites, or scientific investigation.

A cultural resource inventory report was completed and submitted to the Oregon State Historic Preservation Office under the *Programmatic Agreement among the United States Department of Agriculture Forest Service Pacific Northwest Region (Region 6), the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Officer Regarding Cultural Resource Management in the State of Oregon by the USDA Forest Service (R6 PA), 2004*. This report found no cultural resources.

Cumulative Effects

When considering past, present, and reasonably foreseeable future actions, this project would not exacerbate effects to historic properties. The current condition and trend would continue, which protects historic properties through inventory and project design so no historic properties are impacted by project implementation.

Hydrology

Introduction

A pilot watershed analysis area inventory, covering the Sucker Creek watershed was conducted in 1995 and resulted in the Grayback/Sucker Key Watershed Analysis (USDA Forest Service 1995). The pilot analysis was supplemented with the Grayback-Sucker Watershed Analysis in 1998 (USDA Forest Service 1998). In 2011 the area was analyzed using the watershed condition framework process (USDA Forest Service 2010). This analysis found that the Grayback Creek, Middle Sucker Creek, and Lower Sucker Creek watersheds are in Condition Class II, functioning at risk (FSM 2521.1). This rating is due largely to road density, fine sediment in stream channels, high summer water temperature, simplification of instream channel habitat, and lack of off-channel habitat. The Upper Sucker Creek watershed was found to be in Condition Class I, functioning properly. In response to these ratings a Watershed Restoration Action Plan (WRAP) for the Sucker Creek watershed was completed in 2011 and identified both Grayback Creek and Middle Sucker Creek as priority subwatersheds. The Sucker Creek watershed is also considered a Tier 1 Key Watershed under the Northwest Forest Plan (USDA Forest Service, USDI Bureau of Land Management 1994). These analyses are incorporated by reference here.

Affected Environment

Watershed Condition

According to the WRAP (USDA Forest Service 2011) and Grayback/Sucker Watershed Analysis (1995), aquatic resources have been altered by past timber harvest, road construction, and placer mining operations. In some areas this has led to excessive bank erosion, increased sedimentation, and simplified habitat. Channel modifications due to hydraulic mining and other placer operations are especially evident along Sucker Creek. Landslide activity and severe flooding of the watershed in 1964 and 1997 accentuated pre-existing channel changes. Many channels exhibit disturbance responses such as increased width, elevated water temperature, loss of pool habitat due to sedimentation or loss of substrate, loss of side channel habitat due to channel straightening, increased channel migration, and loss of channel structure and habitat due to lack of large wood.

To improve stream function and habitat, as recommended in the WRAP, a major stream restoration project was completed along both Grayback and Sucker Creeks. The project included construction of a new meandering channel, installation of large wood structures, distribution of historic mining tailings piles to create floodplains, construction of side channels and other off channel habitat, such as rearing ponds and alcoves, spreading of soil on new floodplains, and revegetation of floodplains and riparian areas. This project was completed in 2013 and has improved stream health, including increasing stream shading and lowering water temperature, over approximately 2.5 miles.

Riparian Areas and Wetlands

Riparian vegetation consists of primarily Port Orford cedar, Douglas-fir, incense cedar and some ponderosa pine along with hardwoods such as alder, ash and bigleaf maple. Riparian areas throughout the watersheds have been impacted by stream cleanout, past hydraulic and placer mining activities, logging and roads in the riparian area. These impacts have decreased stream shade along the stream systems. Executive Order 11990 (1977) protects riparian areas by requiring federal agencies to avoid to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands.

Channel Morphology-Stream Channel Characteristics

Streams can be classified into general types by organizing stream feature data into discrete combinations that typically occur together. The Rosgen classification scheme utilizes stream types based on landscape morphology and stream reach characteristics (Rosgen 1996). For each stream reach a “most frequent range” of values is given for morphological descriptions, such as width-depth ratio (Rosgen 1996). The following descriptions are based on stream surveys and descriptions from the WRAP.

The streams along the mainstem of Sucker Creek and lower reaches of Grayback and Caves Creeks are “C” channel types (sinuous, low gradient channels; Rosgen 1994). The tributaries are mostly “B” (low sinuosity, moderate gradient) and “A” (low sinuosity, high gradient) channel types. Sediment and large wood can move quickly during storms from the upper reaches to the “C” depositional stream reaches in the mainstem of Sucker Creek and lower Grayback Creek. Generally, there is a surplus of sediment and lack of large wood in these areas. The Lower Sucker Creek subwatershed contains a wide alluvial valley that is primarily agricultural use.

Water Quality

Water quality is protected under the Clean Water Act (33 USC 1251-1387), which requires maintenance and restoration of the physical, chemical, and biological integrity of waters of the United States. The federal government has granted states the regulatory authority to enforce state water quality standards and requirements of the Clean Water Act. Sucker Creek watershed provides for many state designated beneficial uses. These include domestic water supply, irrigation, livestock watering, mining, and cold water biota (salmonid). Water from the Sucker Creek watershed is appropriated for irrigation, livestock, industrial and domestic use. There are no point source discharges within the Sucker Creek watershed.

Stream Temperature

Stream temperature is protected under the Clean Water Act and State Water Quality Standards. On March 1, 2004, new water temperature standards were adopted by the State of Oregon (Oregon DEQ 2004). The temperature policy of the Commission is to protect aquatic warming and cooling caused by anthropogenic activities.

A Water Quality Management Plan (WQMP) was completed for the national forest portion of Sucker Creek and for all of Grayback Creek (Blanchard et al. 1998). In this plan, the Oregon Department of Environmental Quality established a Total Maximum Daily Load (TMDL) for stream temperature. In 2000, a WQMP and TMDL were completed for the remaining BLM and private lands. Both plans developed a strategy for maintaining existing stream temperature and future recovery through active and passive restoration of stream shade. Based on the WQMP and TMDL, Sucker Creek was removed from the 303(d) list in 2000.

Turbidity (Fine Sediment)

Turbidity, or the loss of water clarity, is due to the presence of suspended particles of silt and clay. Other materials, such as finely divided organic matter can also contribute to the loss of water clarity. A large input of fine sediment from the road system has been determined to be an issue in the Sucker Creek watershed as detailed in the December 1996/January 1997 Rogue River-Siskiyou National Forest Flood Report. Fine sediment is prevalent in cobble interspace habitat in many stream reaches causing channel widening, water quality impairment, and aquatic simplification, particularly in Grayback Creek and the depositional reaches of Sucker Creek. The road system contributes fine sediment in several ways, including road-related slope failures, chronic sediment delivery, road drainage problems, and increasing the channel network through in-sloped roads and ditches.

Pacific Watershed Associates measured the potential for both chronic and episodic sediment delivery from road systems that could impact stream channels. As seen in table 6, the potential future sediment input they measured is very high in all the watersheds and will continue to add fine sediment to the stream systems during high flow events (Weppner and Weaver 2010, 2013).

Table 6. Current road impacts by watershed, including miles of road, road density, percent of road within 300 feet of streams and potential future sediment yield to stream channels

Watershed Name	Area within NFS Boundary (mi^2)	Miles of NFS road	Road Density on NFS land (mi/mi^2)	Percent of NFS Road within 300 feet of streams	Potential future sediment yield (yds^3)
Grayback Creek	24.2	51.1	2.1	39	55,515
Lower Sucker Creek	4.3	12.4	2.9	36	4,929
Middle Sucker Creek	22.7	84.2	3.7	37	111,556
Upper Sucker Creek	23.0	40.3	1.8	38	73,521
Total for Sucker Creek watershed	**74.2**	**188.0**	**3.4**	**38**	**245,521**

Sedimentation (Coarse)

Sediment delivery to stream channels from roads and road networks has been regionally documented and is recognized as a significant impediment to watershed health and salmonid habitat (Cederholm et al. 1981; Furniss et al. 1991; Harr and Nichols 1993; Flosi et al. 1998; NMFS, 2001; Suttle et al. 2004). Erosion prevention through stormproofing rural, ranch, and forest roads provides immediate benefits to the streams and aquatic habitat of a watershed

(Weaver and Hagans, 1994; Nature Conservancy 2010). It diminishes the impact of road-related erosion on the biological productivity of the watershed's streams and allows future storm runoff to transport accumulated coarse and fine sediment rather than continuing to allow accelerated anthropogenic erosion and sediment delivery from managed areas. The combination of intense rainfall, rapid snowmelt and steep colluvial filled channels results in high rates of erosion and sediment delivery from debris flows and debris torrents. These mass wasting processes often initiate at or upslope from roads and act to deliver sediment to stream channels, increasing sediment deposition and triggering bank erosion, channel scour, culvert plugging, stream diversions and subsequent road failures, mass wasting and erosion.

Past, Present and Future Actions

The project interdisciplinary team (IDT) identified past actions that might have cumulative impacts with the proposed action early in the analysis process. Past timber harvest, road construction, mining, and natural flood events have affected the existing condition in the analysis area. Past timber harvest and road construction have increased water yields, extended the channel network, and increased sedimentation to the stream system through connected disturbed areas. These actions are discussed below.

Timber Harvest

Regeneration harvest and associated road construction has occurred throughout the watershed. Approximately 30 percent of the National Forest System lands have been harvested since 1940. Historical harvest activities included stream clean-out operations that removed large wood and resulted in construction of a high road density. Past timber harvest impacted riparian vegetation by clearing large wood from along the stream channels. This had multiple impacts on stream condition including, decreasing shade and increasing temperature; removing large wood creating more simplified in-stream habitat; and increasing stream erosion and widening due to loss of riparian vegetation. Harvest rates on the National Forest System lands in the Sucker Creek watershed have slowed substantially since 1990, allowing forest canopy to become reestablished in managed stands.

Roads

Although roads facilitate the use and management of natural resources, roads may also result in adverse changes in watershed processes. The road system contributes to aquatic habitat degradation in several ways including, road-related slope failures generating sediment or aggravating existing landslides; road drainage increasing routes for sediment to enter channels; and culverts often acting as barriers to fish passage. Roads can alter hydrologic processes that influence geomorphic processes such as sediment transport, sediment delivery, and mass-wasting. Roads can impact hillslope hydrology by transforming slower subsurface flow to rapid surface flow, which may alter the synchronization of hillslope runoff to the stream channel. Roads are relatively impermeable surfaces that increase both peak rates and runoff volumes. This increased runoff facilitates gully development below road drainage structures such as ditch relief culverts, waterbars, or rolling dips creating continuous flow paths into streams. Roads can also divert existing stream channels into road ditches when culverts become blocked by debris (i.e., stream piracy; Wemple et al. 2001). Culvert plugging has been found to be the largest source of sediment delivery to stream systems (USDA 1998, Weppner and Weaver 2010, 2013).

There are approximately 200 miles of road within the Sucker Creek watershed. The average road density in the watershed is 3.4 miles per square mile, which is generally considered to be at high risk levels for generating cumulative watershed effects. The 2010 Forest Service Watershed

Condition Classification (WCC) Guide identifies a threshold of 2.4 miles per square mile where "the density and distribution of roads and linear features in the watershed indicates that there is a higher probability that the hydrologic regime (timing, magnitude, duration, and spatial distribution of runoff flows) is substantially altered (USDA Forest Service 2010)." Approximately, 38 percent of the road length is within 300 feet of streams which increases the probability that the road system is hydrologically connected to the stream network. According to the WCC watersheds with more than 25 percent of the road length within 300 feet of streams are likely to be in poor condition or have impaired watershed function (ibid.). The WRAP identified road restoration including stormproofing, decommissioning, and putting roads into storage as essential projects for improving watershed condition throughout the Sucker Creek watershed (USDA Forest Service 2011).

Pacific Watershed Associates collected data on the road system within Sucker Creek watershed as documented in the Grayback Creek Sediment Source Assessment and Sediment Control Plan and 2013 Phase II Sucker Creek Sediment Source Assessment and Sediment Control Plan. The Grayback Assessment surveyed nearly 69 miles of road and determined that a total of 234 individual sites and approximately 29 miles of paved, rock surfaced and unsurfaced roads and associated ditches and cutbanks either were currently eroding and delivering sediment to streams in the project area, or showed a potential to do so in the future (Weppner and Weaver 2010). Phase II of the assessment surveyed the other three subwatersheds within the Sucker Creek watershed. This inventory collected data on 139 miles of road and determined that a total of 482 sites and 59.5 miles of hydrologically connected road surfaces have potential to deliver sediment to streams. Stream crossings, especially those with undersized culverts, represented the most important sites for future road failures throughout both assessment areas (Weppner and Weaver 2013). Total chronic sediment delivery from roads to the stream system was estimated at 28,000 cubic yards over a 10-year period, with episodic sediment delivery being much greater at approximately 245,000 cubic yards as seen in table 7 (Weppner and Weaver 2010, 2013).

In addition to producing sediment, culverts can also block passage of aquatic organisms, such as fish and the foothill yellow-legged frog. There are five culverts within the Middle Sucker Creek watershed that are considered barriers for migration of juvenile steelhead and one that is a barrier for juvenile rainbow trout. The Grayback Creek watershed has two culverts considered barriers; one for juvenile steelhead and one for juvenile cutthroat trout.

Past Flood Events

The December 1996/January 1997 storm and flood was estimated to be a 25-year hydrologic event in Sucker Creek. This flood event provided a good source of data for evaluating susceptibilities of the road system within the Sucker Creek watershed to erosional events, identifying the downstream effects, and for reducing the frequency and magnitude of road failures during future storm events. The vast majority of road damage sites in 1996 were associated with culverts and stream crossings. Culvert plugging was over twice as common as the second leading cause of road failure, accounting for 43 percent of all road failure sites. The other causes included fill failure by stream undercutting, culvert plugging by debris torrents, fill failures not at stream crossings, cutbank failures, and exceedence of culvert capacity (USDA Forest Service 1998).

High flood flows in many streams mobilized stored sediment and woody debris that then passed through the culvert, exceeded culvert capacity or plugged culvert inlets. Culvert exceedence and plugging in turn caused ponding, overtopping and crossing failure (washout) or stream diversion. Stream diversions led to gullying, landsliding and other cascading effects where small failures high in the watershed produced or contributed to increasingly large failures farther down the hillside. For example, stream diversions frequently resulted in plugging of multiple ditch relief culverts, ditch scour, hillslope landslides and/or gullies. These processes resulted in greatly increased sediment delivery to the stream system.

Some road treatments have occurred to reduce the downstream impacts of future floods, but much of the road system has yet to be proactively treated. Roads that have already received decommissioning treatments are dispersed throughout Sucker Creek Legacy Roads project area. These roads are typically overgrown and have been partially or completely decommissioned by removing culverts and excavating road fill at stream crossings, and constructing waterbars or cross road drains (large dips) on the road surface. However, in some locations the standards for effective road decommissioning were not followed and erosion is continuing (Weppner and Weaver 2010).

Mining

Placer gold mining, including historic and modern suction dredging has degraded stream channel structure and function. Historic mining operations straightened stream channels and created simplified in-stream channel habitat. Modern suction dredging activities work the streambed re-arranging gravels into loose piles, creating an unstable stream bed.

Peak Flows

Some researchers believe that there is a synergistic effect between roads, harvest, and peak flows. Taken collectively, results of watershed studies indicate that the size of peak flows may be increased, decreased, or remain unchanged after logging. Whether or not a change occurs depends on what part of the hydrologic system is altered, to what degree, and how permanent the alteration is (Thomas and Megahan 1998). See the hydrology report for more information on these peak flow studies.

Environmental Consequences

Effects Mechanisms and Analysis Framework

The Environmental Consequences were evaluated using multiple effects mechanisms to describe impacts to hydrologic resources associated with sediment delivery to streams from the road system resulting in impacts to water quality. These include:

- Potential sediment delivery to streams in cubic yards
- Road density in miles per square mile
- Percentage of road within 300 feet of streams
- Number of road stream crossings
- Number of culverts removed or replaced

Watershed effects were described using 6^{th} field subwatersheds within the larger Sucker Creek 5^{th} field watershed. Watersheds were not analyzed beyond the Forest boundary due to a lack of data regarding past and present management actions, and watershed conditions off the Forest.

Potential Sediment Delivery

Potential sediment delivery to streams was determined using data collected by Pacific Watershed Associates and documented in the *Grayback Creek Sediment Source Assessment and Sediment Control Plan* and *2013 Phase II Sucker Creek Sediment Source Assessment and Sediment Control Plan*. Their field inventory consisted of an assessment of all road-related erosion sites and road segments showing evidence for existing or potential erosion and sediment delivery to the stream system. The assessment did detailed field measurements to estimate, among other things, potential sediment delivery to streams. A total of 465 stream crossings sites were inventoried. For each site, the fill dimensions were measured and used to calculate road fill and potential sediment delivery volumes with the STREAM computer program.

Removal of road stream crossings requires that all of the fill material over the culvert be removed and the width of the channel and banks be created to mimic the shape above and below the culvert. During this process a small amount of material is lost or spilled into the stream channel. As the newly restored stream channel goes through the first high flows, some channel adjustment may occur, also resulting in a small amount of material delivered to the stream. To account for this it was assumed that 10 percent of the total material removed in the fill could be delivered to the stream channel from removing the road stream crossing. This most likely is an over estimate of what would actually occur.

A 65 percent reduction in sediment delivery was estimated for treatments at all sites contributing sediment that are not associated with a culvert on decommissioned and storage roads as well as on all roads proposed for stormproofing (Nelson et al. 2012).

Road Calculations

All other indicators, including road density, percent of road within 300 feet of streams, number of road stream crossings, and number of culverts removed were analyzed using GIS data and layers from the Rogue River Siskiyou National Forest as well as data from the Pacific Watershed Associates reports and databases (Weppner and Weaver 2010, 2013).

Alternative 1 – No Action

Direct and Indirect Effects

Under this alternative the existing condition would remain the same. No decommissioning or storage treatments would occur; however, normal road maintenance could still be done on level 2 and 3 roads. Level 2 roads are considered a low priority and the likelihood of road maintenance occurring on these roads is very low. It was assumed that no treatments would occur on these roads under this alternative. Level 3 roads could receive road maintenance treatments as funding allowed. There is no way to determine which roads would be treated; therefore, all level 3 roads were assumed to have road maintenance treatments done, reducing potential sediment delivery to the stream channel. However, due to funding the amount of treatment would likely be less than in alternative 2.

The existing roads would be managed in their current state, and would continue to affect hillslope hydrology, act as connected disturbed areas, and degrade water quality. Road densities would remain the same as summarized in table 7, and there would be no reduction in road segments adjacent to stream system. There would be a reduction in sediment transport to the stream system if maintenance was done on all level 3 roads. The high potential sediment yield especially within the Middle Sucker Creek, Upper Sucker Creek, and Grayback Creek watersheds indicate that these areas have been and will continue to be impacted by high sediment input to the stream system.

Watershed Condition

Watershed condition would not be improved in either of the priority sub-watersheds. The resource concerns associated with roads in the WRAP (2011) would not be addressed. Subwatersheds that are currently functioning at risk would remain in this condition and may be further degraded if a large storm event causes a substantial pulse of sediment to the stream system.

Riparian Areas and Wetlands

There would be no impacts to riparian areas and wetlands above those already occurring from mining operations under this alternative.

Channel Morphology

It is likely that impacts to channel morphology would occur under this alternative. Due to the high potential for sediment delivery to the stream network from the existing road system, a large flood event could impact channel morphology, causing pool filling, and channel widening and instability.

Water Quality

Temperature and Dissolved Oxygen

No increase in stream temperature is expected. Dissolved oxygen levels are dependent on stream temperature. An increase in temperature could decrease the water's dissolved oxygen levels. Since no increase in stream temperature is expected there would be no change in dissolved oxygen. Alternative 1 would not affect temperature or dissolved oxygen concentrations.

Hazardous Materials

With no road decommissioning or storage treatments and only the replacement of some culverts on level 3 roads, there would be no increased risk to hazardous materials entering the stream system[4].

Turbidity and Sedimentation

Both chronic and episodic sediment delivery would continue to occur from stream crossings, landslides, ditch relief culverts and other sources. There are approximately 480 stream crossings within the Sucker Creek watershed. No culverts at road stream crossings would be removed, however some replacements would occur on level 3 roads. With little road maintenance occurring culvert inlets may plug. This would decrease the culvert's carrying capacity during storm events so the water would overtop the culvert fill washing it out. The material, both fine and coarse sediment, would be transported downstream increasing turbidity and coarse sedimentation in the stream system. Failure of both stream crossings and road ditch culverts during storm events would result in a total of approximately 224,000 cubic yards of sediment being delivered to the stream system within the Sucker Creek watershed.

There would be a slight reduction in sediment supply due to stormproofing/maintenance on approximately 25 miles of level 3 roads. The amount of reduction would depend on the type of maintenance that is performed. It has been shown that stormproofing treatments reduce sediment

[4] Any treatments involving heavy equipment near the stream channel create a chance of fuel or hydraulic fluid spilling into the stream channel. Best management practices and contract specifications would mitigate any potential spill from entering a live stream during project activities for alternative 2.

yield to streams by approximately 65 percent (Nelson et al. 2012), which would be approximately 63,000 cubic yards.

It is unlikely that all of the sites would fail during the same storm event, but several could fail at one time. The sediment from this type of failure would fill stream pools and change the composition of spawning gravels located downstream of failed sites.

With no reduction in the road system, current impacts to hillslope hydrology would continue to affect subsurface flow. The high amount of connected disturbed area associated with gully development below drainage features would remain and continue to increase flow and sediment load within the stream network. The road density and percent of road near a perennial stream would remain high. A higher road density would also increase the likelihood of road related slope failures especially in the Grayback Creek watersheds, where landslides currently have potential to contribute over 4,000 cubic yards of sediment to the stream system.

Cumulative Effects

Hydrologically, past and present actions influencing cumulative effects include past flooding, timber harvest, current and historic mining, road building, and stream restoration as discussed under the affected environment section. Reasonably foreseeable actions include continued hydraulic mining and potential timber harvest. With any ground disturbing activity, there is the potential for increased erosion and delivery of sediment to the stream system. With the high sediment loads currently present within the watershed any additional sediment yield would detrimentally impact watershed health. Alternative 1 would not be consistent with the Aquatic Conservation Strategy as detailed in chapter 4, and would impact stream and watershed health.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Proposed activities under alternative 2 include approximately 28 miles of road that would be decommissioned, 31 miles would be put into storage and 3 miles would be converted to non-motorized trail. Another 118 miles would be stormproofed, which is 76 miles more than would occur under alternative 1 normal maintenance schedule.

Table 7. Resulting miles of road, road density, percent of road within 300 feet of streams and potential future sediment yield to stream channels for alternative 2.

Watershed Name	Area within NFS Boundary (mi^2)	Miles of NFS road	Road Density on NFS land (mi/mi^2)	Percent of NFS Road within 300 feet of streams	Potential future sediment yield (yds^3)	Percent change in potential sediment yield
Grayback Creek	24.2	48.3	2.0	38	16,599	70
Lower Sucker Creek	4.3	10.5	2.4	34	1,462	70
Middle Sucker Creek	22.7	67.1	3.0	29	30,295	73
Upper Sucker Creek	23.0	33.1	1.4	34	22,176	70
Total for Sucker Creek watershed	**74.2**	**159.0**	**2.1**	**33**	**70,532**	**71**

Under the modified proposed action road densities would decrease, and there would be a reduction in road segments adjacent to stream systems and a reduction of potential sediment delivery to stream systems of approximately 70 percent as shown in table 7.

Watershed Condition

Watershed condition would be improved by reducing road density and removing culverts, which would address the essential projects in the WRAP that are recommended as necessary to improve watershed condition (USDA Forest Service 2011). The road density on NFS lands would be reduced to 2.1 miles per square mile, which is below the 2.4 miles per square mile threshold set in the WCC and would move this attribute from poor to functioning at risk. The percent of road near a perennial stream would be lowered to 33 percent, which is still high. However, with the removal of high-risk culverts, road decommissioning, storage, and stormproofing the potential sediment yield from these roads would be greatly decreased (Nelson et al. 2012, Weppner and Weaver 2010, 2013). Watershed condition in the subwatersheds classified as functioning at risk would move toward and possibly attain proper functioning condition.

Riparian Areas and Wetlands

Riparian areas may be improved under this alternative. Approximately 9 miles of road would be decommissioned within 300 feet of the stream corridor. These treatments would help to improve subsurface flow, reduce sediment delivery, and reintroduce riparian species.

Channel Morphology

Channel morphology would be improved, especially at approximately 108 proposed road stream crossing removal locations. Road crossings that are decommissioned would have stream channels rebuilt to mimic the upstream and downstream morphology allowing for a connection in flow through these sites which once were unnaturally impacted often through narrowing of the stream channel by undersized culverts. Future impacts to channel morphology would be reduced by decreasing sediment input and the risk of pool filling, and channel widening and instability.

Water Quality

Hazardous Materials

Heavy equipment used for decommissioning could potentially spill hydraulic fluid or fuel. Best management practices and project design criteria would mitigate any potential spill from entering a live stream channel.

Turbidity and Sedimentation

No increase in turbidity is expected from decommissioned or stored roads during storm events. The small amount of sediment from removal of the culverts would cause some localized, short-term and very small increases in turbidity. To ensure turbidity is not increased from roads put into storage all fill removed from stream crossings will be moved to an upland location away from the stream channel.

Potential sediment yield off of decommissioned and storage roads would be reduced by approximately 35,000 cubic yards as shown in table 8. The reduction from stormproofing treatments above those considered in alternative 1 would be approximately 55,000 cubic yards (table 9). The total percent change in sediment yield with all treatments would be approximately 70 percent (table 8), or 44 percent above that possible under alternative 1. A detailed analysis of potential sediment yield from each road is shown in table 4.

Table 8. Summary of potential sediment delivery to the stream system from decommissioning and storage treatments

Sub-Watershed	Treatment	Miles of road treated	Number of culverts removed	Potential sediment delivery from culvert failures	Potential sediment delivery during and post decom (yds^3)	Potential sediment delivery from other road impacts (yds^3)	Reduction in potential sediment delivery from Alternative 1 (yds^3)
Grayback Creek	Decom.	3	2	0	38	6	358
	Storage	13	20	183	501	840	4,511
Lower Sucker Creek	Decom.	2	0	0	0	175	324
	Storage	3	10	0	106	284	949
Middle Sucker Creek	Decom.	18	29	0	585	1,326	7,656
	Storage	9	15	9	641	890	5,773
Upper Sucker Creek	Decom.	5	18	3	1,109	0	9,949
	Storage	6	8	6	222	0	1,999
Total	**Decom.**	**28**	**49**	**3**	**1,732**	**1,507**	**18,287**
	Storage	**31**	**53**	**198**	**1,470**	**2,015**	**16,972**

Table 9. Summary of potential sediment delivery to the stream system from stormproofed roads

Sub-Watershed	Miles of road treated	Potential sediment delivery before treatment (yds^3)	Alternative 1: potential sediment delivery after treatment of Level 3 roads (yds^3)[5]	Alternative 2: potential sediment delivery after all road treatments (yds^3)	Reduction in potential sediment delivery from Alternative 1 (yds^3)
Grayback Creek	35	42,945	22,553	15,031	7,522
Lower Sucker Creek	6	2,564	2,564	897	1,667
Middle Sucker Creek	49	76,697	40,207	26,844	13,363
Upper Sucker Creek	27	59,558	53,308	20,845	30,463
Total	**117**	**181,764**	**118,632**	**63,617**	**55,015**

Roads

The modified proposed action would improve infiltration, hillslope hydrology, stream health, and water quality. With a reduction in the road system, impacts to hillslope hydrology and infiltration would be reduced especially on roads decommissioned using “Level a” treatments, improving subsurface flow. There would be a reduction in the extended channel network associated with the current road system, reducing the amount of connected disturbed area and sedimentation to the

[5] Level 3 roads were assumed to be treated with normal maintenance under Alternative 1.

stream system. Since culvert plugging contributes the greatest amount of sediment to the stream system (USDA Forest Service 1998) removing over 100 culverts will greatly reduce the risk of large sediment pulses to the stream system.

Cumulative Effects

This alternative would reduce adverse cumulative effects by decreasing potential sediment yield to the stream system, improving hillslope hydrology and dispersed subsurface flow, and decreasing the extended channel network associated with the current road system. The proposed treatments would help reduce the cumulative effects of past road construction and ground disturbance on watershed function. With decreased sediment yield, the effectiveness of the watershed restoration projects would be maintained. Essential projects discussed in the WRAP associated with road decommissioning would be added to those already completed with the stream restoration project (USDA Forest Service 2011) moving the watersheds that are currently functioning at risk toward, and possibly attaining, proper functioning condition. The modified proposed action is consistent with the Aquatic Conservation Strategy as detailed in chapter 4 and watershed conditions would improve.

Peak Flows

Based on the hydro-regions developed by Grant et al., the project area would be located in the transitional hydro-region. For basins within the transitional zone, Grant et al. found that the detection threshold for changes in peak flows occurs at 20 percent of watershed area harvested. Thus, changes in peak flows cannot be detected at harvest levels of less than 20 percent. Further, Grant et al. found that peak flow increases decrease with decreasing percent of basin area harvested (Grant et al. 2006). Any trees lost from road decommissioning, storage and stormproofing activities would not be large enough to affect the overall watershed vegetation composition. Any conifers removed that are greater than 18 inches in diameter would be used for stream restoration projects throughout the Forest. It would be preferable to keep root wads attached to any trees that will be used for stream restoration.

Megahan did a reanalysis of methods and data used by Jones and Grant (1996). Peak flows were increased up to 90 percent for the smallest peak events on the clear-cut watershed and up to 40 percent for the smallest peak flows on the patch-cut and roaded watershed. Percentage treatment effects decreased as flow event size increased and were not detectable for flows with a 2-year return interval or greater on either treated watershed. Treatment effects decreased over time but were still found after 20 years on the clearcut watershed but for only 10 years on the patch-cut and roaded watershed (Megahan 1998). On the basis of this assessment of the small watershed treatment effects, there is little support for concluding that forest roads had an inordinate effect on peak flows on the patch-cut and roaded watershed. Neither of the alternatives will affect peak flows.

Soil Resources

Introduction

The Grayback/Sucker Pilot Watershed Analysis (USDA Forest Service 1995) provides a detailed description of the physical setting of the Sucker Creek 5th field watershed, including climate, geology, soils, and landforms, and is incorporated by reference into this analysis. Please refer to this document for more detailed information.

Affected Environment

Soils are developing under a climate of moist, cool winters and warm dry summers. The relatively warm, humid climate promotes deep weathering of bedrock to soils. Soils in the analysis area have been mapped by the Natural Resources Conservation Service, as part of the Josephine County soil survey (SCS 1983; NRCS Web Soil Survey at http://websoilsurvey.nrcs.usda.gov/). Within the Sucker Creek watershed, there are 63 different soil map units. For this analysis, soil map units are combined and discussed based upon the common parent materials that formed the soils. Acres of major soil-parent material groups in the watershed are displayed in table 10. Figure 7 visually displays the locations of different soil-parent material groups, as well as the soil survey map units.

Table 10. Acres of each major soil-parent material group in the Sucker Creek watershed.

Soil Group by Parent Material	Acres (approximate) in the Sucker Creek watershed
Alluvially influenced soils	3,025
Metasedimentary-metavolcanic soils	41,231
Mix, serpentine and metasediment/metavolcanic soils	1,072
Peridotite-Serpentinite soils	865
Granitic soils	15,100

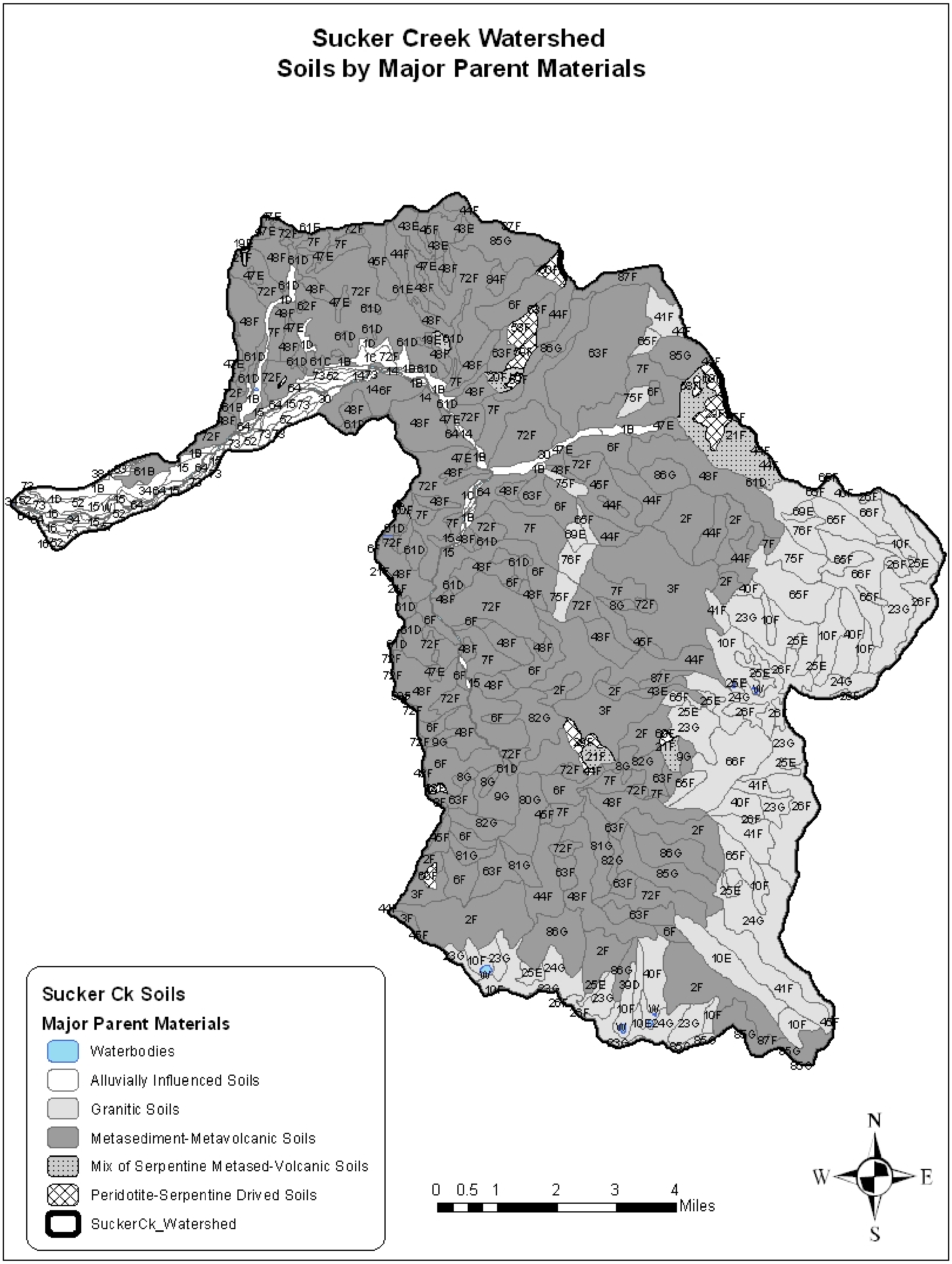

Figure 7. Soils by major parent material

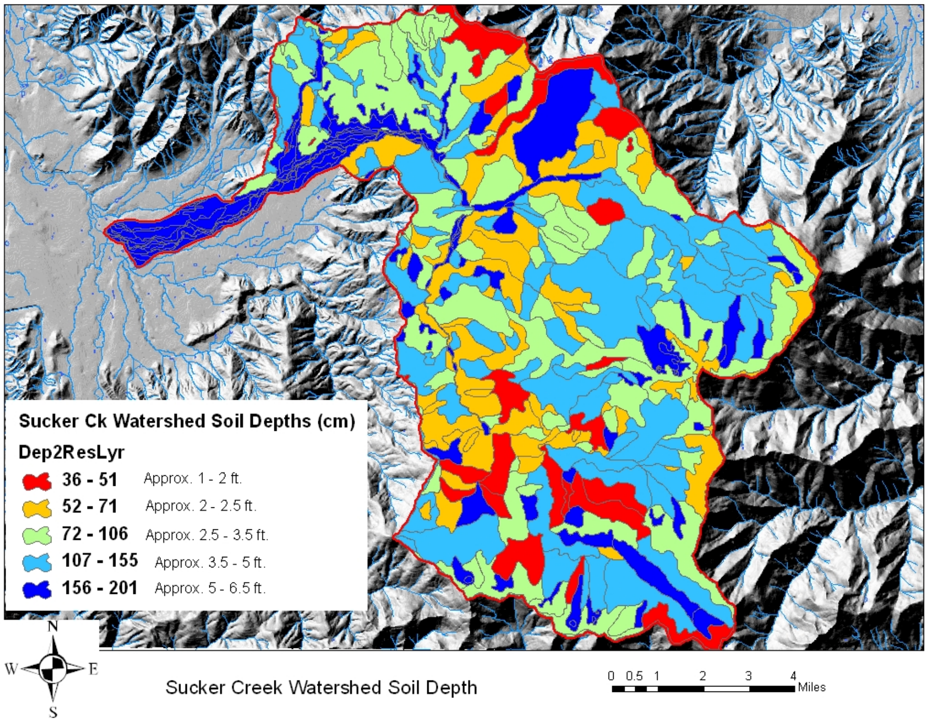

Figure 8. Soil depths in the Sucker Creek watershed

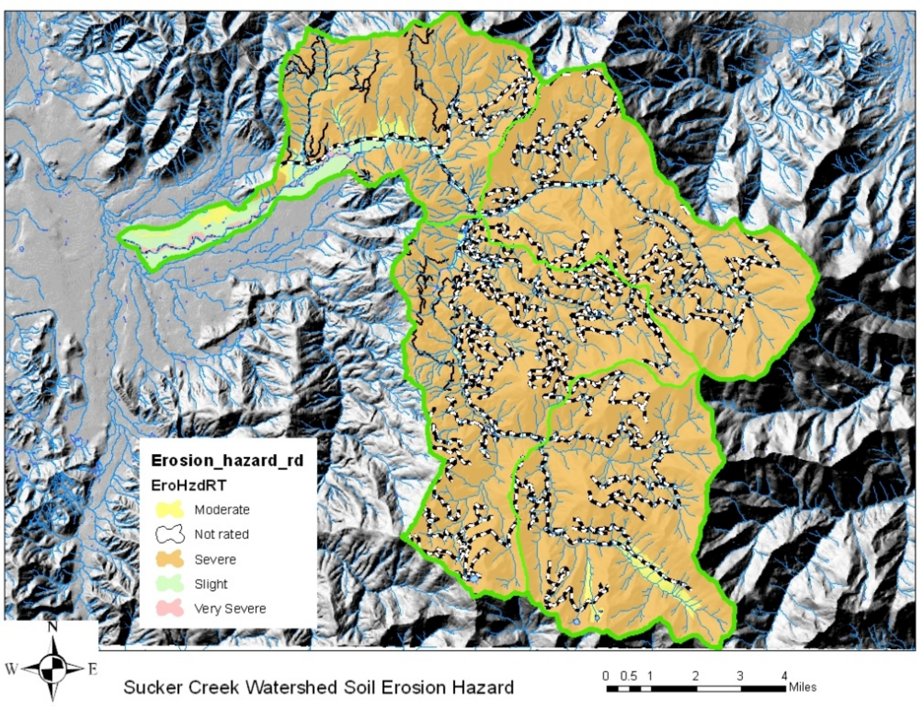

Figure 9. Erosion hazard rating in the Sucker Creek watershed

Past and Present Actions

The project ID team identified past actions that might have cumulative impacts with the proposed action early in the analysis process. These actions are described below.

Past Roads Impacts to Soil

Effects of roads on slope stability can include road-related slope failures, typically from fill-slope failures that create landslides or slumping, or cut-slope failures due to undercutting the toe of an unstable slope. Cut-slope failures can be acute failures, or create slow moving slumps. In addition, when a natural landslide or debris torrent occurs, roads can exacerbate downslope erosion through the addition of volumes of road fill in the path of the slide when the road prism fails. Roads can also exacerbate hillslope failures when debris flows are diverted down a road prism and shedded onto a new hillslope location. Much of the early road building included the side-casting of material, which often resulted in increased fillslope instabilities as compared to modern road building practices that do not allow side-casting.

Pacific Watershed Associates conducted road-related sediment source assessments for the Grayback Creek subwatershed and the rest of the Sucker Creek watershed in 2010 and 2012, respectively (Weppner and Weaver, 2010; Weppner, 2012). In these assessments, they identified 29 locations of road-related landslides in Grayback Creek subwatershed, and 71 locations in the rest of Sucker Creek watershed. Through field observations during the road-related sediment source assessments, roads traversing hillslopes of 45 percent or greater were highlighted as being at an increased risk for additional road-related failures in the future (Weppner and Weaver, 2010). Of the roughly 195 miles of road in the Sucker Creek watershed, approximately 116 miles are traversing hillslopes of 45 percent or greater. Of that, approximately 70 miles of road is on slope grades of 75 percent or greater.

Where roads traverse the steep slopes of glacial till (soil map units 10E and 10F in the Sucker Creek watershed), shallow groundwater is often intercepted due to the compacted till layer and converted to surface flows. This intercepted groundwater has caused road cut and fillslope instability and erosion issues in the past, requiring engineered rock designs for slope stability and installation of more drainage features. Roads that have sections which traverse through these soils include: 4611, 4611-070, 4611-079, 4611-969, 4611-988, 4612-098, 4612-472, 4612-540, 4703, 4812-041, 4812-538, 4812-539, and 4812-540.

Roads have not been identified as causing increased instability in deep seated earthflows in the watershed. However, it has been identified that where the 4611-910 road and spurs traverse through a deep seated earthflow in the Grayback Creek subwatershed, the natural instability of the inner gorges of stream channels during saturated soil conditions make it difficult to cost-effectively design and maintain a road system with permanent stream crossings. Currently, the stream crossing on the 910 spur near the junction with 4611-019 is blown out and impassible.

The effect of roads on soil productivity is a total soil resource commitment to manage an area for some other use than supporting the growth of otherwise desired plant communities; in this case, committing an area to a “non-productive” road prism for the foreseeable future. The acres of soil in the Sucker Creek watershed currently committed to forest roads instead of site productivity is approximately 338 acres (0.5 percent of the watershed).

Effects of roads on soil erosion can include sheetwash and channelization of flows down the road bed from ruts, causing rilling and gullying of native soils. Native surfaced roads are especially susceptible to soil erosion since the native soil in the roadbed is exposed to precipitation, and directly impacted by vehicle traffic. Road surfacing, such as crushed aggregate or pavement, acts as a kind of “effective groundcover”, protecting the underlying native soils from erosion processes. Accumulation of litter and re-establishment of vegetation on the roadbeds of closed and decommissioned roads also reduce the risk of road surface erosion over time. Effective surfacing of roads and proper drainage to prevent channelization of surface flows down the roadbed, is particularly important in the Sucker Creek watershed, where the overwhelming majority of soils have a severe erosion hazard risk rating for roads and trails. Currently there are roughly 38 miles of native surfaced roads in the Sucker Creek watershed. In addition, many roads that have historically been surfaced with crushed aggregate are in various states of aggregate loss due to deferred maintenance and road disrepair.

Past Timber Harvest Impacts to Soil

It is commonly accepted that clearcutting, particularly on steeper slopes, can lead to accelerated soil creep and increased mass wasting due to the loss of mechanical soil-to-bedrock reinforcement by the root system, and increased soil moistures. Roads in the path of slope failures off of clearcut stands often increased the damage of the debris torrents through diverting flows and/or blowing out and adding volumes of fill to the debris flow. An example of a historic debris torrent that appears to have been triggered at least in part by a clear cut is in the Upper Sucker Creek subwatershed. The 2012 Sucker Creek Sediment Source Assessment documents a relatively recent (likely triggered by the 1997 winter storm event) debris torrent at Site 616 on NFS road 4612-540, and aerial photos indicate an old clear cut at the head of this failure, which had blown out the road but had since been rebuilt at the crossing. The location of this failure is in granitic soils on a steep glacial sidewall.

Past harvest practices also had little guidance or understanding of effects to soil productivity through compaction or displacement, and site preparation methods often resulted in a lack of residual organics to provide effective groundcover to protect the soils from erosion.

Past Mining Impacts to Soil

Mining in the watershed has been focused on gold, consisting mostly of hydraulic and suction dredge mining along stream channels. Effects to slope stability, soil productivity, and soil erosion has been primarily limited to disturbance on stream terraces, banks, and channels, and has had minor impacts to soils and slope stabilities when compared to natural processes and effects from other management activities.

Environmental Consequences

Effects Mechanisms and Analysis Framework

The analysis area for slope stability, soil productivity and erosion consists of the locations of the roads being analyzed in this EA, since effects to a particular soil is typically localized to defined areas where direct and indirect effects can be measured. This analysis also takes into account the soils upslope and downslope of these roads, in particular where slopes are 45 percent or greater in slope, and/or have in the past or have the potential in the future, for slope instability.

The environmental consequences were evaluated using multiple effects mechanisms to describe impacts to slope stability, soil productivity, and erosion hazard from the road system. These include:

- Miles of open and closed roads traversing slopes of 45 percent or greater;

- Treatments on roads traversing glacial till soils (soil map units 10E, 10F);
- Acres of land put back into soil productivity for desired plant communities;
- Reduction of erosion hazard potential: miles of native-surfaced roads per proposed treatment.

The Grayback Creek and Sucker Creek Sediment Source Assessments (Weppner and Weaver, 2010; Weppner, 2012) focused on road-related erosion and impacts to fish bearing streams; therefore erosion sites with no potential sediment delivery to streams were excluded. Also, only potential and existing landslides related to road systems were included in the inventory. Since predicting the exact locations of future potential road-related failures is difficult to predict or quantify, this analysis assumes that roads traversing hillslopes with slopes of 45 percent or greater are at a greater risk of potential failures, as this slope break was identified in the sediment source assessments as increasing risk.

We assume in this analysis that decommissioned roads are on a trajectory of soil productivity recovery, utilizing varying degrees of active and passive restoration; therefore their total acreages are not included in the total amount of land taken out of productivity. Roads that are put into storage (i.e. closed, maintenance level I), are still considered committed to something other than soil productivity because it is expected that these roads would be re-opened in the next 10 to 20 years, so any restoration of site productivity in the interim is temporary.

It is assumed that surfaced roads (such as pavement or crushed aggregate) provide effective erosion control to prevent native soil erosion of roads, as this cap acts as a form of effective groundcover that protects the underlying native soil particles from becoming detached and transported by precipitation or wind.

Slope ranges were generated in ArcMap by utilizing the “Slope (Spatial Analysis) Tool”, which identifies the slope (gradient, or rate of maximum change in z-value) from each cell of a raster surface, in this case the hill shade raster. The “Reclassify (Spatial Analyst) Tool” which reclassifies (or changes) the values in a raster, was then used to get the specified ranges.

Alternative 1 – No Action

Direct and Indirect Effects

Slope Stability

Under this alternative, the total amount of National Forest System roads traversing slopes of 45 percent or greater would remain at approximately 116 miles. Roads on these steeper slopes would continue to be at risk from fillslope failures and initiation of debris torrents over time. Locations of potential failures would not always be predictable, but some would develop cracks and slumps that would indicate a likely future failure upon inspection. These indicators could provide the potential for road maintenance to prevent the failure, but there is the potential that not all of these locations would get found and maintained in time to prevent failures, due to the current and foreseeable future predicted budget forecast for road maintenance.

Roads that intercept compacted glacial till soils and associated shallow groundwater would continue in their existing condition. Roads that have sections which traverse through these soils include: 4611, 4611-070, 4611-079, 4611-969, 4611-988, 4612-098, 4612-472, 4612-540, 4703, 4812-041, 4812-538, 4812-539, and 4812-540.

The 4611-910, -912, and -914, which traverse through a deep seated earthflow, would remain as they are on the landscape.

Soil Productivity

Under this alternative, the existing condition would remain the same. Three hundred thirty-eight acres of road bed would continue to be committed to a use other than site productivity into the foreseeable future.

Erosion Hazard

Approximately 35 miles of native surfaced roads in the Sucker Creek watershed would continue to have an increased potential for native soil erosion off the roadbed. Stormproofing could still be done on level 2 and level 3 roads, but there is a very low likelihood that this activity would occur on level 2 roads because they are considered a low priority. There are approximately 3 miles of level 3 road (the upper end of FS4611) that has some native surfacing, and it is assumed that stormproofing activities would be implemented on this section of road to prevent surface soil erosion.

Cumulative Effects

Cumulative effects would occur where other past, present, and reasonably foreseeable future activities overlap with the roads in the analysis area, or indirect effects of these roads (such as road-related landslides). Past and present actions influencing cumulative effects on soils and slope stability include past and current timber harvest, mining, and road building, as discussed under the affected environment section. Reasonably foreseeable actions include continued gold mining along stream drainages and potential timber harvest.

No measurable cumulative effects are expected, as these activities are not expected to overlap with any direct or indirect effects of the roads in the analysis area. Best management practices and standards and guidelines are implemented with mining and timber harvest activities that mitigate and avoid unstable and potentially unstable areas, including road-related instability. Best management practices and Forest Plan standards and guidelines are incorporated into mining and harvest activities to maintain, enhance, and/or restore soil productivity and effective ground cover, which protect soils from unacceptable levels of detrimental soil disturbance and soil erosion. This includes best management practices for the protection and restoration of roads that are utilized in mining and timber management activities.

Alternative 2 – Modified Proposed Action

Under alternative 2, approximately 28 miles of road would be decommissioned, 31 miles would be put into storage, and 3 miles would be converted to non-motorized trail. Another 118 miles would be stormproofed (see table 11).

Other connected actions of the Sucker Creek Legacy Roads and Trails Project include the use of existing rock quarries as rock sources for project activities and salvaged woody material from decommissioning, storage, and stormproofing activities that is in excess of what is needed on-site for stabilization, erosion control, and other terrestrial needs. This excess material could be hauled off-site and utilized in stream restoration projects, for wildlife needs in other late-successional reserve locations that are deficient in downed wood, or for special wood products, such as firewood.

Slope Stability

With implementation of alternative 2, approximately 17 miles of roads that traverse 45 percent or greater slopes would be decommissioned, which would greatly reduce or eliminate the risk of future road-related failures and downslope debris torrents in these areas (table 11). Approximately 2 miles of road traversing slopes of 45 percent or greater would be decommissioned and converted to a non-motorized trail. The potential for future trail-bed related failures would be greatly reduced or eliminated through decommissioning of the roadbed.

Approximately 19 miles of roads that traverse 45 percent or greater slopes would be put into storage, which would greatly reduce the risk of future road-related failures and downslope debris torrents in these areas. At implementation, stream crossing road fills would be removed, and any unstable or potentially unstable road fill slopes would be pulled back adequately to prevent the road from failing while in storage.

Approximately 71 miles of roads that traverse 45 percent or greater slopes would be storm proofed, which would reduce the risk of future road-related failures and downslope debris torrents in these areas. Storm proofing activities would include drainage improvements and maintenance that would help to prevent fill slope failures, as well as early detection and repair of fill slopes showing indications of likely future failure (cracking, slumping, etc.).

Table 11. Miles of road per proposed treatment on slopes at a higher risk of road-related failure.

Treatment	RoadsTreated (mi)	Roads Treated on 45% + Slopes (mi)
Decommission	28	17
Decommission / convert to non-motorized trail	3	2
Storage	31	19
Stormproof	118	71

Implementation of alternative 2 would benefit current and potential slope stability issues with all roads that traverse through steep, compacted glacial till soils.

Roads that would be decommissioned through these soil types include part of 4611-070, 4611-969, part of 4812-041, and 4812-539. Decommissioning would eliminate future road-related failures by pulling out the road fill in unstable areas, which in these soils tend to be at multiple drainage crossings.

The 4612-098 road would be decommissioned and converted to a non-motorized trail. Decommissioning activities and design into a trail would reduce the larger road related potential future failure risk, though the maintenance of part of the original road bed for the trail would not eliminate all the risk. Conversion to a trail, however, would include establishment of proper drainage to mitigate ongoing and future effects of shallow groundwater capture and related cutslope instability, where it occurs.

The 4611-988 and 4612-540 roads, where they cross through these soil types, would be put into storage. Stream crossings and associated shallow groundwater interception drainage areas would have culverts and fill removed to reduce the risk of slope failures in these areas while the roads are in storage. When the roads are needed in the future, these locations would be reconstructed for the life of the need using best management practices for road stream crossings and drainage design, then pulled and placed back into storage.

The remaining roads that cross through compacted glacial till soils would be stormproofed. These include the 4611, part of 4611-070, 4611-079, part of 4612-098, 4612-472, 4703, part of 4812-041, 4812-538, and the 4812-540. Stormproofing would reduce the risk of slope failures and erosion where road cuts intercept shallow groundwater through road maintenance practices that would include improvements to road drainage and cut and fillslope maintenance to maintain the stability and integrity of the road.

Additionally, the 4611-910, -912, and -914 roads that traverse through a deep seated earthflow, would be put into storage. Instability of the earthflow triggered by periodic saturated soil conditions would continue at natural rates, but increased localized slope failures triggered by location of the roads at stream crossings would be eliminated, through proper pull out of fill material at stream crossings.

Soil Productivity

Under alternative 2, all of the planned decommissioned roads, which totals roughly 50 acres, would be re-committed to soil productivity; 248 acres would continue to be committed for something other than soil productivity (i.e., used as a road, and include stored and stormproofed roads).

Roads that are decommissioned, including the 3 miles decommissioned and converted to single-track, non-motorized trail, would experience a range of recovery to productive soils, depending on site conditions and level of active versus passive restoration techniques employed. Active decommissioning would include a range of road obliteration, such as at stream crossings, fill slope pull back, road bed decompaction, and vegetation planting, which would result in the direct effect of breaking up soil compaction within the soil profile in the road prism and more quickly revegetating the area. These actions would increase the ability of water and air to move through the soil profile, and allow plant roots to penetrate deeper into the soil. As successive generations of vegetation establish and die, the organic matter content of the surface and subsurface soils would increase, adding nutrients to the soil and promoting beneficial soil organisms. Through active decommissioning activities, it would be expected that soil productivity would improve to similar surrounding forest conditions much more quickly than through passive restoration.

Road sections planned for decommissioning that are in areas with low risk for failure, erosion and sediment delivery to streams would likely employ more passive restoration techniques. These sections of roadbed may have no treatments, or the road prism may be scarified and seeded. Soils in these sections would be maintained in a state of soil impairment, and it would be expected that this would be a long-term (greater than 50 years) effect. Over a long period of time (decades to hundreds of years, depending on soil textures, depth to restrictive compaction, soil moisture, organic matter levels, etc.), as successive generations of shrubs and trees populate the road prisms, deposit organic matter to the surface and add fine and coarse organics to the soil profile from decomposing roots, soil productivity would approach and potentially return to levels seen in the surrrounding forested areas.

Most roads would end up with a range of active to passive restoration techniques, since site specific conditions can vary widely along the length of a road and site specific conditions would be incorporated into the final decommissioning design.

Roads that would be put into storage and roads that are stormproofed would remain committed to a use other than soil productivity, but stored roads would experience some short-term improvement to soil productivity while in storage. Soil productivity in riparian areas at pulled stream crossings would be temporarily reestablished, as well as other locations where road prism compaction would be temporarily broken up, such as berming or fill pull-back locations, and where vegetation is planted for interim erosion control.

Erosion Hazard

Under alternative 2, approximately 16 miles of native surfaced roads would be decommissioned, approximately 8 miles of native surfaced roads would be put into storage, and approximately 14 miles of native surfaced roads would be stormproofed.

Road decommissioning would re-establish surface roughness, and effective groundcover through re-establishment of vegetation and organic matter (fine and coarse litter) which would stabilize and protect surface soil particles from erosion processes.

Putting roads into storage would maintain the roads for future use; roads would be closed to vehicle travel which would allow litter to accumulate, as well as vegetation to re-establish in the roadbed over time, developing effective ground cover over the next 3 to 5 years. Particularly sensitive locations (i.e. evidence of sheetwash and/or rill erosion on the road prism) would be actively re-vegetated to establish effective groundcover more quickly (see the Sucker Creek Legacy Roads and Trails Revegetation Plan).

Stormproofing would involve normal road maintenance practices to eliminate or minimize the risk of road surface erosion, such as capping the roadbed with crushed aggregate, and improving road surface drainage through the addition of rolling dips, improving the ditch line, and adding ditch relief culverts. There are four existing gravel pits in the area which could be used as rock sources for road improvements.

Additionally, along all roads where decommissioning, storage, or stormproofing activities create soil disturbance, such as pulling or replacing culverts and cross-drains, or road prism ripping, there is the potential for soil erosion in and off of these disturbed sites. Best management practices for effective erosion control would be required, and are incorporated into the mitigation measures for project implementation, such as mulching, seeding, straw or wood chip wattles, and/or sediment fencing. It is expected that erosion potential would be greatly reduced and localized, or eliminated, with implementation of erosion control mitigations during project implementation.

Cumulative Effects

Cumulative effects would occur where other past, present, and reasonably foreseeable future activities overlap with the roads and proposed road treatments in the analysis area, or indirect effects of these roads (such as road-related landslides, or re-establishment of vegetation on a decommissioned roadbed). Past and present actions influencing cumulative effects on soils and slope stability include past and current timber harvest, mining, and road building, as discussed under the affected environment section. Reasonably foreseeable actions include continued gold mining along stream drainages and potential timber harvest.

No measurable cumulative effects are expected, as these activities are not expected to overlap with any direct or indirect effects of the road treatments in the analysis area. Best management practices and standards and guidelines are implemented with mining and timber harvest activities that mitigate and avoid unstable and potentially unstable areas, including road-related instability. Best management practices and Forest Plan standards and guidelines are incorporated into mining and harvest activities to maintain, enhance, and/or restore soil productivity and effective ground cover, which protect soils from unacceptable levels of detrimental soil disturbance and soil erosion. This includes best management practices for the protection and restoration of roads that are utilized in mining and timber management activities.

Conclusion

None of the connected actions would have any measurable effect to slope stability, soil productivity, or erosion hazard. Rock quarries are existing, and are located and maintained in stable conditions, are already committed to the production of rock and not soil productivity, and require erosion prevention mitigations for their use. Salvaged woody material would be used first for on-site stability, enhancement of soil productivity, erosion control, or other on-site terrestrial needs. Effects of the additional materials are expected to be indecipherable from background productivity, particularly due to the expected scattered and localized application of this material. Excess of this material could be hauled off-site and utilized in stream restoration projects, needs in other late-successional reserve locations that are deficient in downed wood for wildlife, or for special wood products such as firewood.

Implementation of alternative 2 would result in short- and long-term benefits to slope stability, soil productivity, and erosion hazard in the Sucker Creek watershed, over the no-action alternative. Table 12 displays the results of some of the key measurement indicators for effects to slope stability, soil productivity, and erosion hazard, per alternative.

Alternative 2 would reduce the potential for road-related slope failures and debris torrents by decommissioning, storing, and/or providing maintenance to roads traversing slopes that are at a higher risk for slope failures (45 percent or greater). Alternative 2 would address shallow groundwater interception, road drainage, and slope stability concerns on roads that cross through compacted glacial till, through decommissioning of four road segments, converting to trail one segment, storing two road segments, and doing active stormproofing activities on nine segments of road. Under the no-action alternative, all of these road segments would remain on the landscape in their current condition.

Table 12. Summary of some key measurement indicators for slope stability, soil productivity, and erosion hazard, by alternative

Measurement Indicators	No Action	Alternative 2
Slope Stability		
Miles of road traversing 45%+ slopes	123 miles	107 miles
Miles of road traversing 45%+ slopes with reduced risk of failure over time	0 miles	98 miles
Soil Productivity		
Acres of soil committed to forest roads instead of productivity	338 acres	248 acres
Erosion Hazard		
Miles of native surfaced roads at risk of surface soil erosion	35 miles	0 miles

Alternative 2 would result in 50 acres of soils recommitted to soil productivity. The no-action alternative would result in no acres of soils recommitted to soil productivity.

Under the no-action alternative, it is expected that approximately 3 miles of native surfaced road(upper end of 4611) would be treated through stormproofing to prevent the risk of surface soil erosion. Under alternative 2, 38 miles of native surfaced road would be treated to prevent the risk of surface soil erosion (16 miles decommissioned, 8 miles put into storage, and 14 miles stormproofed).

Sensitive Plants

Introduction

The two botanical areas within the Sucker Creek watershed are the Bigelow Lakes and Grayback Mountain Botanical Areas. They total 955 acres and within their borders have native plant diversity with rare sensitive plant species. The proposed Sucker Creek Legacy Roads Project area is delineated by a road prism that includes the road travel way and cut and fill slopes. The treatment area is a previously disturbed corridor. This treatment area is the focus of this analysis and the following species accounts are only the species that occur within the project treatment area (figure). Other rare and sensitive species identified in table 13 will not be affected from the implementation of this project and will not be discussed further.

Affected Environment

Within the proposed project area there are four occurrences of the Rogue River-Siskiyou National Forest sensitive plant species[6] *Erythronium howellii* (Howell's fawnlily), five occurrences of the sensitive plant species *Iliamna lactibracteata* (California globemallow), one occurrence of the sensitive plant species *Solanum parishii* (Parish's nightshade), one occurrence of the sensitive plant species *Lewisia leeana* (Lee's bitterroot), and one occurrence of the sensitive plant species *Phacelia leonis* (Siskiyou phacelia). See table 13 and figure 10. All occurrences were previously known from the project treatment area. Following are species accounts of Rogue-River-Siskiyou sensitive plant species that are found in the proposed project treatment area

Table 13. Forest Service sensitive and survey and manage plant species found within Sucker Creek watershed

Plant Species	Species Status	Found in Project Area
Iliamna lactibracteata (California globemallow)	FS Sensitive	Yes
Erythronium howellii (Howell's fawnlily)	FS Sensitive	Yes
*Phacelia leonis (*Siskiyou phacelia)	FS Sensitive	Yes
Solanum parishii (Parish's nightshade)	FS Sensitive	Yes
Lewisia leeana (Lee's bitterroot)	FS Sensitive	Yes
Gentiana plurisetosa (elegant gentian)	FS Sensitive	No
Streptanthus howellii (Howell's streptanthus)	FS Sensitive	No
Sagifragopsis fragarioides (strawberry saxifrage)	FS Sensitive	No
Buxbaumia virides (buxbaumia moss)	Survey and Manage	No

[6] Shown in light blue in figure 10

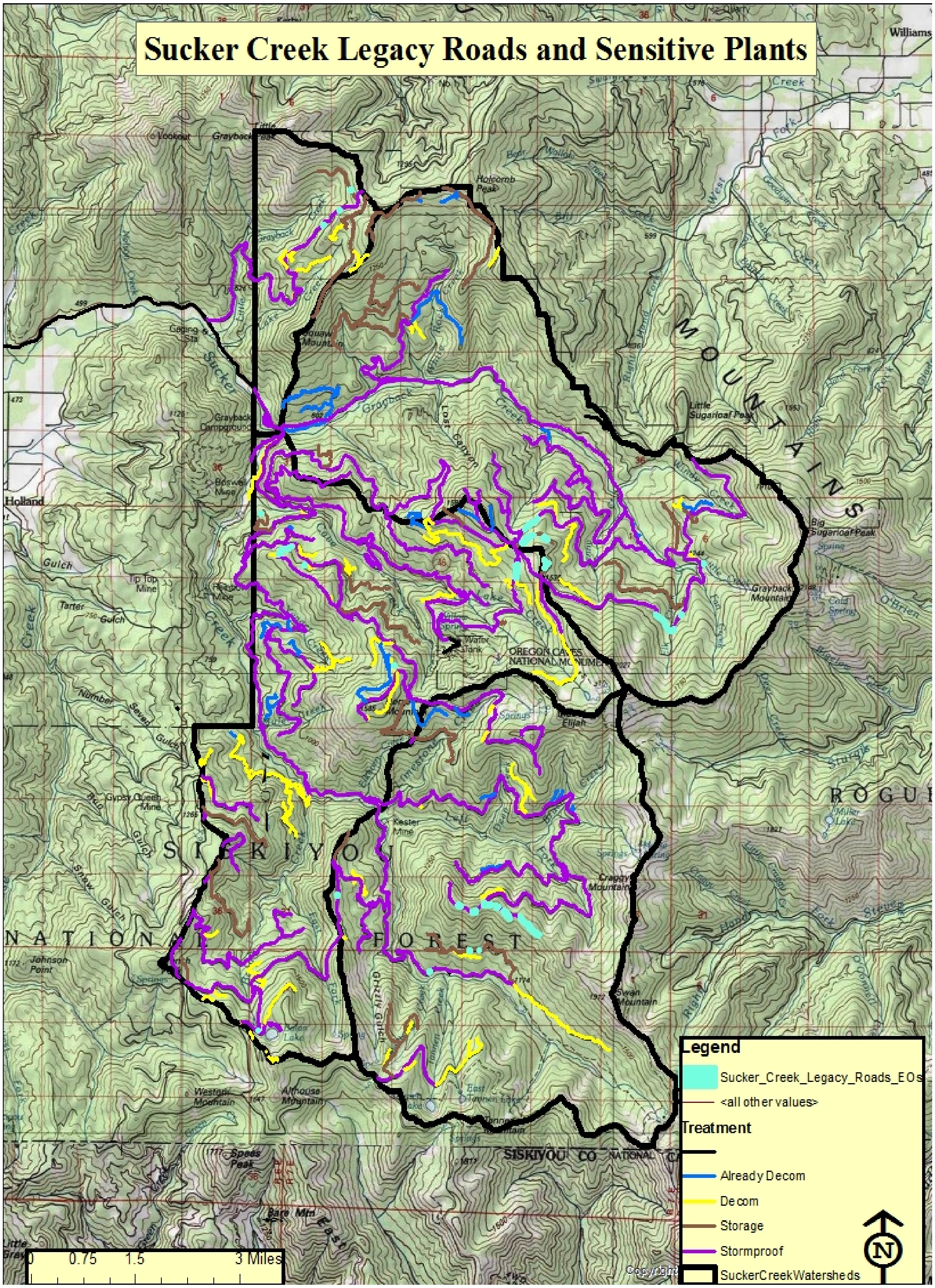

Figure 10. Location of Forest Service sensitive plants in the Sucker Creek Project area

Iliamna lactibracteata (California globemallow)

The Forest Service sensitive plant *Iliamna lactibracteata* (California globemallow) is a member of the Malvaceae (hollyhock) family. The species range is from southwestern Oregon (Coos, Curry, Douglas, Jackson, and Josephine), with one widely disjunct occurrence in Linn County Oregon, to northwestern California (Del Norte, Humboldt, Siskiyou, and Trinity counties). *Iliamna lactibracteata* occurs in burned white fir and Douglas-fir forests.

California globemallow is ranked G3 globally, vulnerable; ranked by Oregon as a S2, imperiled; California S2.2, endangered; and Oregon Biodiversity Information Center, list two species which are rare or threatened in Oregon but more common elsewhere.

Iliamna latibracteata is classified as a Forest Special Status and Sensitive Species in both Regions 5 and 6. In Oregon, the species has been documented in the Rogue River-Siskiyou, Umpqua, and Winema national forests (USDA Forest Service 2004). In California, the species has been documented in the Six Rivers and Shasta-Trinity national forests (CNDDB 2007). *Iliamna latibracteata* is classified as a Special Status and Sensitive Species by the Bureau of Land Management. It has been documented in the Coos Bay and Medford Districts, and is suspected to occur in the Roseburg District (USDI Bureau of Land Management 2005).

The species is nearly entirely restricted to lands managed by the Forest Service and BLM. The emphasis on fuels reduction and returning wildlands to natural fire regimes may benefit the species, provided that post-fire salvage logging, revegetation, and invasive species management does not negatively impact occurrences. The majority of occurrences are known from National Forest System lands in Region 6. Therefore the species is strongly dependent on Region 6 management and conservation efforts.

Erythronium howellii (Howell’s fawnlily)

The Forest Service sensitive plant *Erythronium howellii* (Howell’s fawnlily) is a member of the Liliaceae (Lily) family. The species range is from southwestern Oregon (Josephine and Jackson counties) south to the Trinity Mountains, California (Del Norte, Humboldt, Mendocino, Siskiyou and Trinity counties). It is sometimes listed as a synonym for *Erythronium citrinum* but the Forest Service and Oregon Biodiversity Information Center consider it to be a separate species due to range differences and the lack of an appendage on the inner petals.

It has a state rank of S3: vulnerable in Oregon and a rank of S2.3: imperiled in California. The global rank is G3G4: Vulnerable. The species is an Oregon Biodiversity Information Center (ORBIC) List 1, contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range. In Oregon there are 33 known occurrences and a total of around 230,000 plants. There are 12 occurrences that have a good to excellent viability. The plant species appear stable but is limited in range. Threats include timber harvesting and mining activities.

Phacelia leonis (Siskiyou phacelia)

The Forest Service sensitive plant *Phacelia leonis* (Siskiyou phacelia) is a member of the Boraginaceae (Borage) family. It is restricted to serpentine soils and is found on serpentine meadows and seeps and upper montane coniferous forests from 1200 to 2750 meters in elevation.

Its global status is G2: imperiled, the reason it is given this rank is because of the low number of occurrences, moderate threats, restricted habitat and its limited range. The status in California is S2.2: imperiled and in Oregon it is S1: critically imperiled. The species ranked as an Oregon

Biodiversity Information Center list 1; contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range.

This species occurs in Siskiyou and Trinity Counties in California and occurs only in Josephine County in Oregon. According to the Oregon Biodiversity Information Center, there are two element occurrences in Oregon and about 7,000 plants were reported from these two populations. One of these sites notes motor vehicle disturbance and possible development into a helicopter landing and the other has little information about site quality. This is the occurrence on NFS road 4703521 proposed for decommissioning. According to the California Native Plant Society, there are 18 occurrences in California. Cattle grazing and trampling are listed as the major threats to the species. It is calculated to be moderately vulnerable to climate change.

Solanum parishii (Parish's nightshade)

The Forest Service sensitive plant *Solanum parishii* (Parish's nightshade) is a member of the Solanaceae Family. Its range is Oregon and California. In Oregon the status and ranking is S2; contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. These are often peripheral or disjunct species which are of concern when considering species diversity within Oregon's borders. They can be very significant when protecting the genetic diversity of a taxon. The species in California has no status or ranking; and its global rank and status is G4: apparently secure. The species is ranked as an Oregon Biodiversity Information Center List 2, taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.

The species blooms from April to July and occurs in dry chaparral, meadows and brush land in dry Douglas-fir communities, along road banks, oak woodland and pine forest below 2000 meters. In Oregon it occurs in Curry, Josephine and Jackson counties. In California it occurs throughout the northern part of the state and it also occurs in the southwestern part of the state. Plants appear to respond positively towards fire. *Solanum parishii* may hybridize with *Solanum xanti* but this needs more study.

Lewisia leeana (Lee's bitterroot)

Lewisia leeana (Lee's bitterroot) is a perennial herb in the Montiaceae (Miner's lettuce family). In California it was considered for listing, but was rejected. In Oregon it is an S2, imperiled. It has a global rank of G4, apparently secure. The species is ranked as an Oregon Biodiversity Information Center List 2, contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.

The range is restricted but there do not appear to be any threats to the species. It is listed as a sensitive species by the Forest Service. In Oregon it can be found in Douglas, Jackson and Josephine counties. In California it is found from Fresno County north through Trinity and Siskiyou counties.

Lewisia leeana can be found on granite, serpentine cliffs, rocky slopes, conifer forest from 1300 to 3350 meters in elevation. The blooming period is from June through August. It can hybridize with *Lewisia cotyledon*.

Table 14. Forest Service sensitive plant species, the road where it is located, and the proposed treatment for the road

Sensitive Plant Species	Road Number	Road Name	Proposed Treatment
Erythronium howellii (Howell's fawnlily)	4609	Little Grayback	Stormproof
Erythronium howellii (Howell's fawnlily)	4614014	Horse Cave	Stormproof
Erythronium howellii (Howell's fawnlily)	4609053	Gray Sky	Storage
Erythronium howellii (Howell's fawnlily)	4703051	Bull Pen	Stormproof
Iliamna lactibracteata (California globemallow)	4611960	Lake Creek	Stormproof
Iliamna lactibracteata (California globemallow)	4611070	Bigelow Lakes	Stormproof
Iliamna lactibracteata (California globemallow)	4611079	Lake Mountain	Stormproof
Iliamna lactibracteata (California globemallow)	4611968	Pepper Flats	Storage
Iliamna lactibracteata (California globemallow)	4611955	Pepper Camp Spur	Storage
Lewisia leeana (Lee's bitterroot)	4614435	After Horse	Decommission
Solanum parishii (Parish's nightshade)	4612472	Swan Mountain	Stormproof
Solanum parishii (Parish's nightshade)	4612487	Swan Up	Stormproof
Phacelia leonis (Siskiyou phacelia)	4703521	N. A. Hurry	Decommission

Environmental Consequences

Effects Mechanisms and Analysis Framework

Effects mechanisms serve as tools to quantify the effects to offer a basis for comparing the effects of management practices. Since design criteria (chapter 2) has been created to ensure that no sensitive plants would receive direct impacts from the project activities, indirect effects of the proposed action on botanical resources are minimal. The analysis area to assess direct, indirect, and cumulative effects is confined to the road prisms of road segments proposed for treatment in the Sucker Creek watershed. This has been deemed appropriate since the level of risk to the area's botanical resources is directly tied to management practices proposed in this project.

Summary of Findings for both Alternatives

For the no action alternative: there would be no direct, indirect or cumulative effects to any RRS sensitive plant, lichen, or fungi species because no project activities are proposed.

For the modified proposed action: There would be **no effect** to any federally threatened, endangered, or proposed plant species. RRSNF sensitive plant, lichen, or fungi species **may be affected but will not lead to federal listing or loss of viability to any species**. All TES species identified within the project treatment area that are known to exist would be flagged and avoided to prevent any direct impacts (pdc 2, chapter 2).

Alternative 1 – No Action

Direct and Indirect Effects

Alternative 1 calls for "no action" within the total project area. There will be no implementation or activities within the project area therefore there will be no direct or indirect effects resulting from this alternative.

Cumulative Effects

There would be no cumulative effects resulting from this alternative. Under this alternative the proposed treatment area would progress naturally over time. Sensitive plants occurrences would also naturally progress over time.

Effects Determination

For the Sucker Creek Legacy Roads and Trails Project, Alternative 1, it is my determination that:

- There would be **no effect** to *Fritillaria gentneri* (Gentner's fritillaria) and *Lomatium cookii* (Cook's Lomatium), or any other plant species listed as threatened, endangered, proposed for listing, or candidates under the Endangered Species Act of 1973, as amended (ESA), administered by the U.S. Fish and Wildlife Service (USFWS). This determination is based on the absence of suitable habitat within the project area and the absence of individuals known or expected to occur within the project area.
- There would be **no effect** to any RRSNF sensitive botanical species.

Alternative 2 – Modified Proposed Action

Species-specific Effects:

Erythronium howellii (Howell's fawnlily)

There would be no direct effects to Howell's fawnlily from the proposed project. This includes all activities associated with storm proofing roads, decommissioning roads, and placing roads into storage. There are four occurrences of this sensitive plant species within the proposed treatment area. Design criteria have been established to prevent any direct effects to the Howell's fawnlily occurrences. No project activities would occur within the four occurrences.

There may be some beneficial indirect effects from placing NFS road 4609053 into storage. This may prevent impacts from invasive plants and noxious weeds that may otherwise be introduced and spread from vehicles contaminated with invasive plant seeds or vegetative materials traveling on the road. However, there may be some negative indirect effects to the species if project implementation introduces invasive plants and noxious weeds into the four occurrence areas. Mitigations have been created to limit or prevent the spread or establishment of invasive plants and noxious weeds within the proposed treatment area. These mitigations can be found in the Sucker Creek Legacy Roads Invasive Plant Risk Assessment.

Cumulative effects to Howell's fawnlily include past, present, and foreseeable future actions are bounded by the Sucker Creek watershed where they are found. The bounding was chosen because the gene flow and seed dispersal mechanisms of the *Erythronium* genus are believed to be restricted (Gutian et al. 2003, Weiblan and Thompson 1995). Because there will be no direct and limited adverse indirect effects there will be negligible adverse cumulative effects as a result of the proposed project.

Iliamna lactibracteata (California globemallow)

There would be no direct effects to California globemallow from the proposed project. This includes all activities associated with storm proofing roads, decommissioning roads, and placing roads into storage. There are five occurrences of this sensitive plant species within the proposed treatment area. Design criteria have been established to prevent any direst effects to the California globemallow occurrences. No project activities would occur within the five occurrences.

There may be some beneficial indirect effects from placing NFS roads 4611968 and 4611955 into storage. This may prevent impacts from invasive plants and noxious weeds that may otherwise be introduced and spread from vehicles contaminated with invasive plant seeds or vegetative materials traveling on the road. However, there may be some negative indirect effects to the species if project implementation introduces invasive plants and noxious weeds into the five occurrence areas. Mitigations have been created to limit or prevent the spread or establishment of invasive plants and noxious weeds within the proposed treatment area. These mitigations can be found in the Sucker Creek Legacy Roads Invasive Plant Risk Assessment.

Cumulative effects to California globemallow include past, present, and foreseeable future actions are bounded by the Sucker Creek watershed where they are found. The bounding was chosen because the gene flow and seed dispersal mechanisms of the *Iliamna* genus is believed to be restricted (Harrod and Halpern 2005). Seeds were found to be most abundant within 10 meters of adult plants.

Current management direction is designed to eliminate or reduce possible negative cumulative impacts by protecting known sensitive plants species from direct and indirect impacts. Overall, management of the direct and indirect effects through project design criteria and implementation of appropriate recommendation measures will minimize the potential for negative cumulative effects. Because there will be no direct and limited adverse indirect effects there will be negligible adverse cumulative effects as a result of the proposed project.

Phacelia leonis (Siskiyou phacelia)

There would be no direct effects to Siskiyou phacelia from the proposed project. This includes all activities associated with storm proofing roads, decommissioning roads, and placing roads into storage. There is one occurrence of this sensitive plant species within the proposed treatment area. Design criteria have been established to prevent any direct effects to the Siskiyou phacelia occurrence. No project activities would occur within the occurrence.

There may be some beneficial indirect effects from decommissioning NFS road 4703521. This may prevent impacts from invasive plants and noxious weeds that may otherwise be introduced and spread from vehicles contaminated with invasive plant seeds or vegetative materials while accessing the road. However, there may be some negative indirect effects to the species if project implementation introduces invasive plants and noxious weeds into the occurrence area. Mitigations have been created to limit or prevent the spread or establishment of invasive plants and noxious weeds within the proposed treatment area. These mitigations can be found in the Sucker Creek Legacy Roads Invasive Plant Risk Assessment.

Cumulative effects to Siskiyou phacelia include past, present, and foreseeable future actions are bounded by the Sucker Creek and Althouse Creek watersheds where they are found. Siskiyou phacelia is a small annual phacelia with only two occurrences on the RRSNF and all are found on the Wild Rivers Ranger District. The bounded area is between and around these two occurrences. The bounding was chosen because the species range is restricted and not known to occur north of Portuguese Flat where it borders on the proposed project treatment area. The other Wild Rivers Ranger District occurrence is located 2.2 miles to the southwest. This occurrence is in Oregon about 250 feet north of the California border.

Current management direction is designed to eliminate or reduce possible negative cumulative impacts by protecting known sensitive plants species from direct and indirect impacts. Overall, management of the direct and indirect effects through project design criteria and implementation of appropriate recommendation measures will minimize the potential for negative cumulative effects. Because there will be no direct and limited adverse indirect effects there will be negligible adverse cumulative effects as a result of the proposed project.

Solanum parishii (Parish's nightshade)

There would be no direct effects to Parish's nightshade from the proposed project. This includes all activities associated with storm proofing roads, decommissioning roads, and placing roads into storage. There is one occurrence of this sensitive plant species within the proposed treatment area. Design criteria have been established to prevent any direst effects to the Parish's nightshade. No project activities would occur within the two occurrences.

However, there may be some negative indirect effects to the species if project implementation introduces invasive plants and noxious weeds into the occurrence area. Mitigations have been created to limit or prevent the spread or establishment of invasive plants and noxious weeds within the proposed treatment area. These mitigations can be found in the Sucker Creek Legacy Roads Invasive Plant Risk Assessment.

Cumulative effects to Parish's nightshade include past, present, and foreseeable future actions are bounded by the area around the two occurrences in the Sucker Creek watershed where they are found. The bounding was chosen because the species is only known in the district from two locations on the district. The second occurrence lies geographically far away in the northern section of the district. There are occurrences in the Siskiyou Mountains Ranger District and the Medford District BLM that are geographically isolated from the occurrence within the proposed project treatment area.

Current management direction is designed to eliminate or reduce possible negative cumulative impacts by protecting known sensitive plants species from direct and indirect impacts. Overall, management of the direct and indirect effects through project design criteria and implementation of appropriate recommendation measures will minimize the potential for negative cumulative effects. Because there will be no direct and limited adverse indirect effects there will be negligible adverse cumulative effects as a result of the proposed project.

Lewisia leeana (Lee's bitterroot)

There would be no direct effects to Lee's bitterroot from the proposed project. This includes all activities associated with placing NFS road 4614435 into storage. There is one occurrence of this sensitive plant species within the proposed treatment area. Design criteria have been established to prevent any direst effects to the Lee's bitterroot occurrence. No project activities would occur within the occurrence.

There may be some negative indirect effects to the species if project implementation introduces invasive plants and noxious weeds into the occurrence area. Mitigations have been created to limit or prevent the spread or establishment of invasive plants and noxious weeds within the proposed treatment area. These mitigations can be found in the Sucker Creek Legacy Roads Invasive Plant Risk Assessment.

Cumulative effects to Lee’s bitterroot include past, present, and foreseeable future actions are bounded by the area around the occurrence in the Sucker Creek watershed where they are found. The bounding was chosen because the occurrence of the species is geographically isolated from all other occurrences.

Current management direction is designed to eliminate or reduce possible negative cumulative impacts by protecting known sensitive plants species from direct and indirect impacts. Overall, management of the direct and indirect effects through project design criteria and implementation of appropriate recommendation measures will minimize the potential for negative cumulative effects. Because there will be no direct and limited adverse indirect effects there will be negligible adverse cumulative effects as a result of the proposed project.

Effects Determination

For the Sucker Creek Legacy Roads and Trails Project, Alternative 2, it is my determination that:

- There would be **no effect** to *Fritillaria gentneri* (Gentner’s fritillaria) and *Lomatium cookii* (Cook’s Lomatium), or any other plant species listed as threatened, endangered, proposed for listing, or candidates under the Endangered Species Act of 1973, as amended (ESA), administered by the U.S. Fish and Wildlife Service (USFWS). This determination is based on the absence of suitable habitat within the project area and the absence of individuals known or expected to occur within the project area.
- The proposed project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability to the species** for the following RRSNF sensitive plant species: *Erythronium howellii* (Howell’s fawnlily), *Iliamna latibracteata* (California globemallow), *Lewisia leeana* (Lee’s lewisia), *Phacelia leonis* (Siskiyou phacelia), and *Solanum parishii* (Parish’s horse-nettle). The basis of this determination is: if there are unknown individuals within the project treatment area they may receive impacts during project implementation.
- The proposed project would have **no effect** to any other RRSNF sensitive botanical species. This determination is based on the absence of project impacts to individuals known or expected to occur within the project area and/or the absence of suitable habitat within the project area

Invasive Plants

Introduction

There are many target invasive plant and Oregon State listed noxious weed infestations throughout the project area. Known infestations are controlled annually; however, most infestations take years to eradicate. Subsequently, these infestations may increase in size or spread to non-infested areas. A wide variety of vectors are expected to introduce and spread invasive species throughout the project area. Invasive plant seeds can be transported on vehicles traveling from roads with weed infested areas and are expected to spread readily as they are deposited along road sides. Additionally, off-road vehicle use is a common cause of invasive plant introduction and spread beyond the road prism. Finally, introduction and spread of invasive species by recreational activities, human activities, animals, wind, and water may also occur.

Affected Environment

The following table lists the Wild Rivers Ranger District target invasive species present in the Sucker Creek Legacy Roads Project area. There are 11 species with multiple infestations. Every road within the project area has known invasive plant species infestations (figure 11). Invasive plant surveys and manual treatment (hand-grubbing and/or solarizing with black plastic) of known infestations occurred throughout the proposed planning area. The following Oregon Department of Agriculture (ODA)[7] listed noxious weeds and invasive plants are documented from the project area.

Table 15. Invasive plant species present in the project area

Species ODA Noxious Weed Designation*	Life Cycle	Habitat Preference
Centaurea debeauxii (meadow knapweed) List B	Perennial forb Reproducing by seed	Best adapted to well-drained, light-textured soils in areas that receive some summer rainfall. This includes ponderosa pine and Douglas-fir forests and shrub-steppe habitats with bluebunch wheatgrass, needle-and-thread, and Idaho Fescue.
Centaurea stoebe var. micranthos (spotted knapweed) List B and T	Biennial perennial forb reproducing by seed (viable up to 8 years) and lateral shoots	Best adapted to well-drained, light-textured soils in areas that receive some summer rainfall. This includes ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) forests and shrub-steppe habitats with bluebunch wheatgrass, needle-and-thread, and Idaho fescue. Infestations may change soil conditions to the advantage of this species
Cirsium arvense (Canada thistle) List B	Perennial forb reproducing by seed and shoots from lateral roots (dormant buried seed viable up to 26 years)	Prefers and is invasive in prairies and other grasslands and riparian areas with deep, well-aerated, mesic soils, but also occurs in almost every upland herbaceous community, especially roadsides, abandoned fields, and pastures.
Cirsium vulgare (bull thistle) List B	Biennial forb reproducing by seed (viable 3 years or less)	Occurs in dry to moist habitat, fields, pastures, grasslands, roadways, forest clearings, rock outcrops, and along waterways. Does best in areas with moderate slope. It is not shade tolerant.
Cytisus scoparius (Scotch broom) List B	Perennial shrub reproducing by seed that is long lived	Found in pastures, forest, and wastelands. This nitrogen fixer which has prolific and vigorous growth patterns may have the ability to alter native plant
Hypericum perforatum (St. Johnswort) List B	Perennial forb that reproduces by seed and short runners	Rangeland and pastures (especially when poorly managed), fields, roadsides, forest clearings in temperate regions with cool, moist winters and dry summers. Grows best in open, disturbed sites and on slightly acidic to neutral soils. Does not tolerate saturated soils.
Lathyrus latifolius	Perennial	Occupies a wide range of climactic conditions thriving in the

[7] Preventing and Managing Invasive Plants Final Environmental Impact Statement April 2005 http://www.oregon.gov/ODA/PLANT/WEEDS/pages/profile_perennialpeavine.aspx

Species ODA Noxious Weed Designation*	Life Cycle	Habitat Preference
(perennial peavine) List B	vine/subshrub/ forb/herb reproducing by seed and rhizome	warm wet environment of the Pacific Northwest to the cold dry conditions of the Rocky Mountain States. Little information has been published on this species and it is often overlooked as an invader.
Leucanthemum vulgare (oxeye daisy) Not on List	Perennial forb that reproduces by seed and rhizome	Fields, pastures, waste places, roadsides, railroads, prairies, slopes, disturbed sites.
Linaria vulare (yellow toadflax) List B	Perennial forb that reproduces by seed and rhizome	Found along roadsides, waste places, and cultivated fields.
Senecio jacobaea (tansy ragwort) List B	Perennial forb that reproduces by seed	Invades cut-over forest lands, irrigated and non-irrigated pastures, woodland pastures, and fallow lands. Although it prefers light, well-drained soils in cool, moist climates and rarely is tolerant of high water tables or acidic soils, it can grow in most soil moisture regimes, even where there are hot, dry summers. It can over-winter in areas where temperatures reach -20°F or lower if there is good snow cover.
Melilotus officinalis (sweetclover) Not on list	Biennial forb that reproduces by seed	Sweetclover plants inhabit open fields, roadsides, riparian zones, disturbed sites and other communities from low to middle elevations.

***ODA Designations**

"A" Designated Weed – a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent Recommended action: Infestations are subject to eradication or intensive control when and where found.

"B" Designated Weed – a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties (Table 2). Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

"T" Designated Weed – a priority noxious weed designated by the Oregon State Weed Board as a target for which the ODA will develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the "A" or "B"

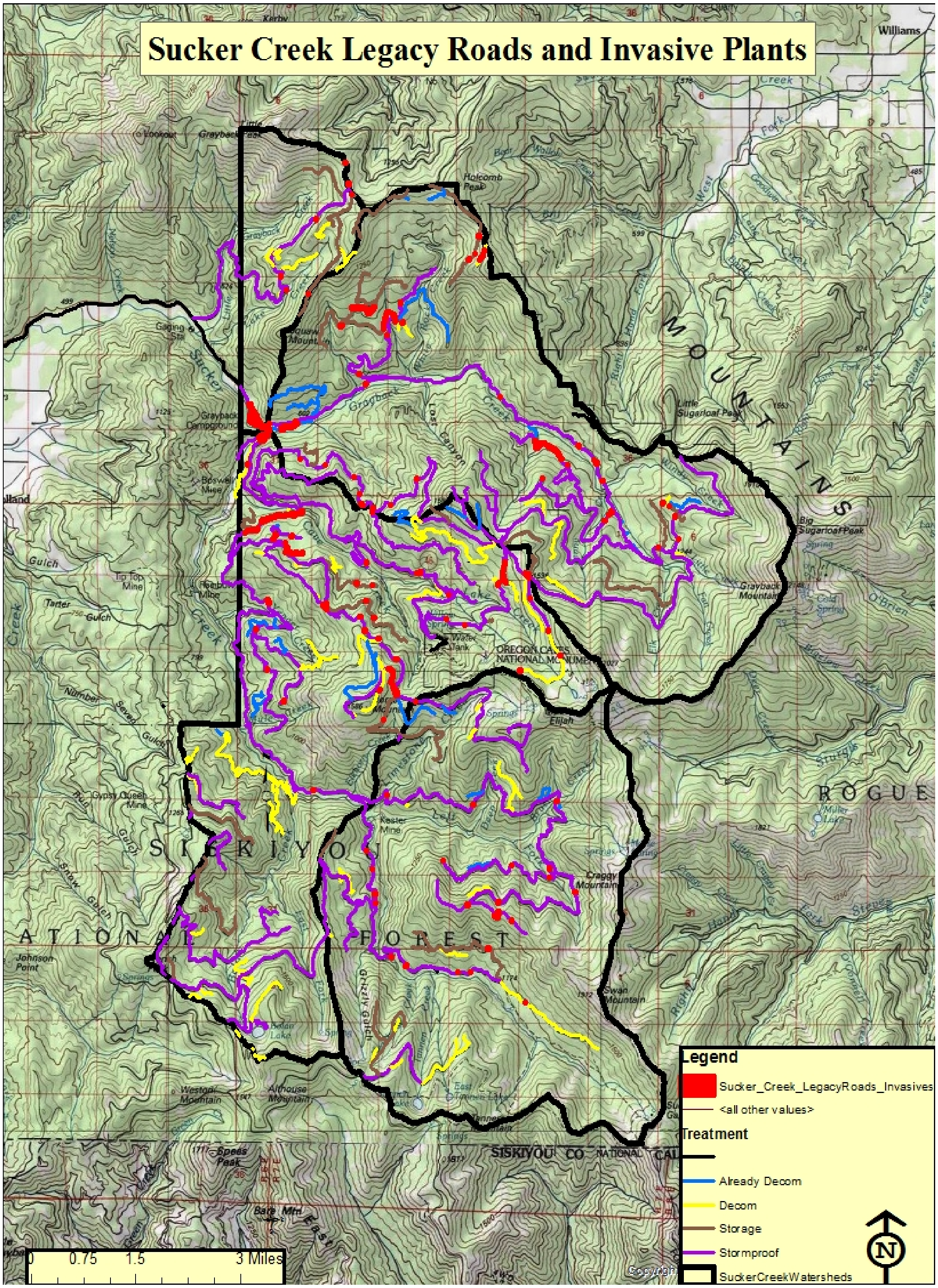

Figure 11. Locations of invasive plants found in the Sucker Creek Legacy Roads Project area

Environmental Consequences

For any ground disturbing activity on RRSNF it is required to determine the risk of introducing and/or spreading invasive plant species. If it is determined that a project has a moderate to high risk of introducing invasive plant species, the project decision document must identify invasive plant species control measures to be undertaken during project implementation (Forest Service Manual 2080, Amendment No. 2000-95-5, effective November 29, 1995).

Effects Mechanisms and Analysis Framework

Effects mechanisms serve as tools to quantify the effects and offer a basis for comparing the effects of management practices. There are native plant communities that would receive impacts from invasive plants within the project activity areas, possible effects of the proposed action to native plant communities by invasive plants are discussed qualitatively, and overall risk is reported in general terms.

There are many vectors that may influence the introduction and spread of invasive plants into the project area. Project vectors include but are not limited to: increased risk of noxious weed seed introduction from vehicles and machinery; the spread of existing infestations from vehicles and machinery; habitat alteration by the creation of new disturbed and open areas; compaction of soils; and the removal of canopy layers. Non-project dependent vectors that increase the risk of invasive plant establishment and spread include: recreational activities by hikers, bikers, and equestrians; vehicular use of trails and roads; and wind and water dissemination of invasive seeds. In addition, wildlife can spread invasive plants by disseminating seeds from transport on their bodies or through their digestive systems.

The analysis area to assess direct, indirect, and cumulative effects is confined to the road prisms of road segments proposed for treatment in the Sucker Creek watershed. This has been deemed appropriate since the level of risk to the area’s invasive plant infestations is directly tied to management practices proposed in this project.

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

Under the no-action alternative there would be no direct, indirect, or cumulative affects to native plant communities from invasive plants. The reason for this determination is: no project activities would occur and there would be no equipment or additional vectors present to establish or spread invasive plants and noxious weeds, their seeds, or vegetative material within the proposed project treatment area.

Alternative 2 – Modified Proposed Action

Direct, Indirect and Cumulative Effects

Project activities include removing native vegetation with equipment. Contaminated equipment and vehicles could introduce invasive plants into the project area. Road work and decommissioning roads could create disturbed and compacted areas where invasive plants can spread and establish. The removal of canopy layers and the creation of open, disturbed, and bare soil areas could directly and indirectly adversely affect adjacent native plant communities. This could occur when introduced aggressive invasive species out-compete them.

There would be minimal adverse cumulative effects from the proposed project. Many actions have previously taken place within the project area disturbing the landscape and allowing for invasive plant infestations to establish and spread. These include the establishment and maintenance of the road prisms, logging, fuel reduction, mining operations, recreation, grazing, and other activities.

Project mitigations (pdc 28-39, chapter 2) would minimize adverse effects to native plant communities from the establishment and spread of invasive plants.

Risk Determination

The overall risk of noxious weed establishment as a result of the project is **moderate**. This determination is based on the following effects to the project area from the proposed treatments:

- There are existing RRSNF target invasive species and Oregon State listed noxious weed infestations within the project area.
- There would be large areas of ground disturbance.
- There would be large areas of soil compaction.
- There would be decommissioning of infested roads.
- Canopy cover and litter layer would be affected.
- Equipment used in the proposed project area may be exposed to and contaminated with invasive plant material.
- Mitigations and project design criteria (chapter 2) would be applied during implementation to prevent the establishment of invasive plant species, or spread of existing invasive plant infestations.

Vegetation

Introduction

The vegetation analysis for the Sucker Creek Legacy Roads Project area focuses on access to existing managed stands located throughout the Sucker Grayback 5th field watershed. This section summarizes the existing conditions for managed stands and anticipated direct, indirect, and cumulative environmental effects that would result from the Sucker Creek Legacy Roads and Trails Project modified proposed action. It references and summarizes the vegetation analysis report. The analysis reviews transportation networks located throughout the project area and the land management allocation for each managed stand and corresponding road segment. It also focuses on stands that have received vegetation treatment— young stand thinning, density management or fuels thinning— along with commercial thinning of intermediate age stands. This report also addresses the need for access of unmanaged stands with an emphasis on timber production within the project area.

Affected Environment

The Sucker Creek Legacy Roads Project area is a landscape of great vegetative diversity. Much of the terrain is covered by mixed conifer forests and broadleaf trees. At lower elevations, Douglas-fir (*Pseudotsuga menziesii*) dominates forest stands on most aspects but is frequently intermixed with other warm-site conifers as well as a number of hardwood trees and shrubs. In contrast, forests above 4,000 feet include a greater assortment of mesic conifers but fewer broadleaf trees. While Douglas-fir trees are likely to grow in upper elevation stands in moderate numbers, white fir (*Abies concolor*)/grand fir (*Abies grandis*) trees typically comprise a sizeable or sometimes predominant proportion of all trees in a stand. Throughout the project area, and scattered among forest stands at both low and high elevations, are open areas that sustain a remarkable number of locally endemic plants. Each plant community growing within the project area (whether human-shaped or natural) is segregated along gradients of elevation, aspect, soils and topography, and is directly affected by vital plant growth determinants such as temperature, effective precipitation and hydrologic regime.

Cover Types

A full description of all cover types for this project is in the vegetation analysis report. All of these descriptions have been created using the local knowledge of Forest Service personnel working in the area in combination with vegetation descriptions provided by Whittaker (1960). Stand information was gathered to include stand examination surveys completed as part of East Illinois Valley Managed Stand project 2006-2010. Information was also gathered from watershed analyses completed for the Sucker Creek drainage that encompasses the analysis area (USDA Forest Service 1998

Management Areas

Management area allocations from the Siskiyou LRMP are shown in figure 12. Late successional reserve comprises the majority of acres in the watershed with over 26,000 acres allocated. This designation exceeds all other management area allocations in the watershed combined.

Managed Stands

The Grayback/Sucker Watershed Analysis (1998) identified key recommendations regarding the overall health of the watershed and the surrounding community. The findings of the analysis show departures for historic stand structures shaped by natural process endemic to the watershed. These recommendations prioritized vegetation treatments into areas of managed stands that occur in interior habitat that has been fractured in the past. These areas fall under the late-successional reserve allocations within the watershed.

The access to the two vegetation cover types, young (immature) forests and intermediate-age/closed canopy forests, are critical to ensure that both cover types can be managed in accordance to the stated land management direction. These management actions include but are not limited to vegetation treatments and are described below. The following table displays previous harvest activity within the Sucker Creek Legacy Roads analysis area. These managed stands have been classified first by decade of harvest and then grouped into stand types.

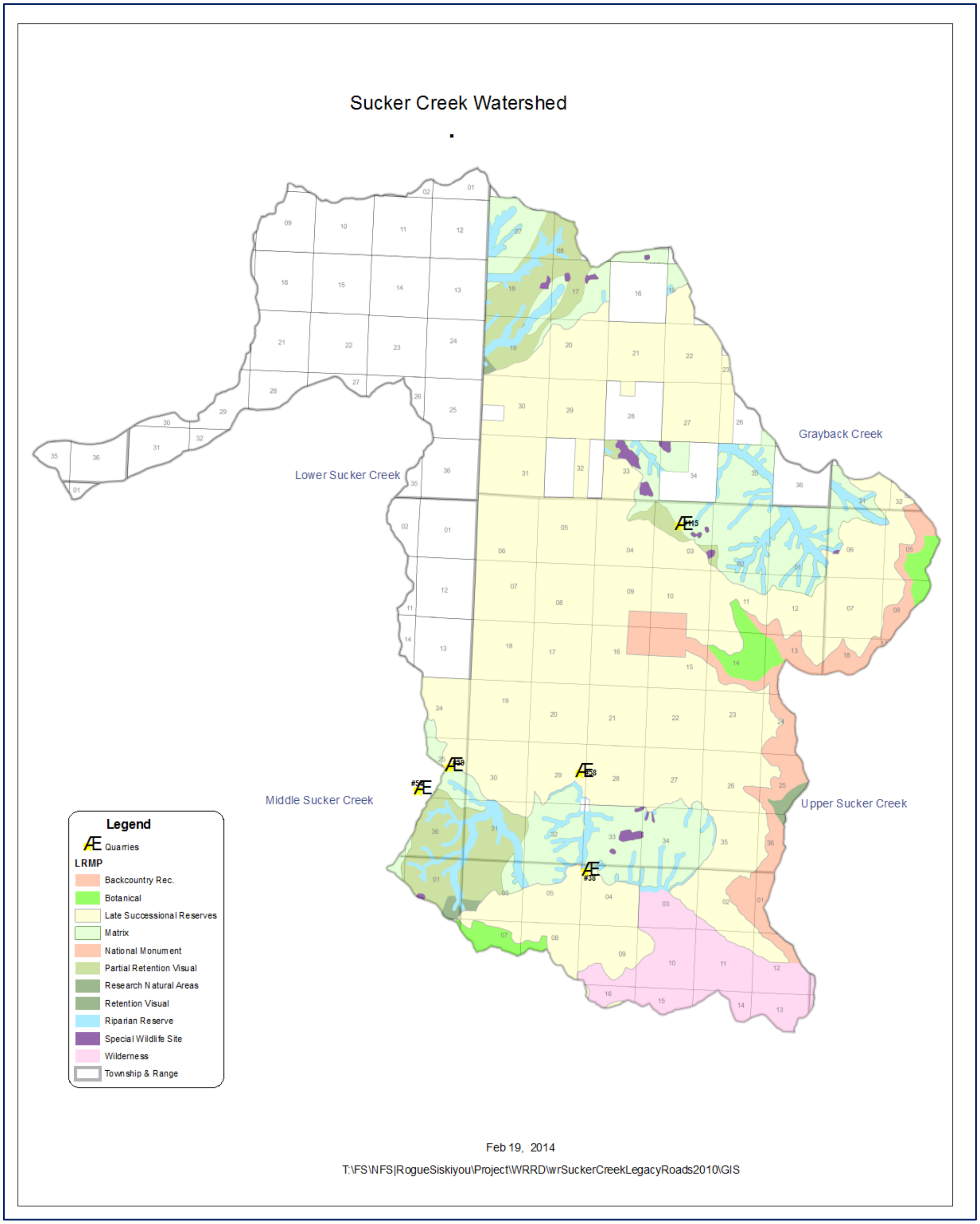

Figure 12. Land and Resource Management (1989) direction as amended by the Northwest Forest Plan (1994) for the Sucker Creek Legacy Roads and Trails analysis area

Table 16. Managed stands in the Sucker Creek Legacy Roads and Trails analysis area

	Intermediate-age/Closed Canopy Forests			**Young (Immature) Forests**			**Total Acres in Managed Stands**
Harvest Year by Decade	1940 - 1950	1950-1960	1960-1970	1970-1980	1980-1990	1991 to Present	
Acres Harvested	56	386	2492	2774	3773	1395	10,876

Young (immature) forest type vegetation treatments are described in the Plantation and Hazardous Fuels Treatment Environmental Analysis ROD (USDA Forest Service 2002). The analysis differentiated the young (immature) forest types into stands with three age classes: 0 to10-year-old stands, 10- to 20-year-old stands and 20- to 30-year-old stands and activities that would occur in regards to allocation. Access is required for thinning operations into these stands to accomplish the goals and objective of the land management allocation in which they reside (late-successional reserve, riparian reserve and matrix). Thinning and fuels treatments require access for contractors to enter these managed stands. Typical thinning operations in this forest type include a chain saw crew for thinning and pruning and a handpile crew that piles slash for burning after the wood cures (woody moisture levels are reduced to ensure consumption of the fuels).

Commercial thinning activities include utilizing Forest System roads to gain access to project sites for saw crews or machines (feller bunchers, harvesters and forewarders) to enter the stands and thin trees and yard saw timber (to include cable yarders) to landings that on occasion utilize existing roads. Road access is also required for hauling woody material (saw timber, post poles and firewood) that result from thinning operations that occur across land management allocations where wood products are a byproduct of thinning and are not needed for down woody debris, snag requirements or in-stream coarse woody debris. In land management allocations where wood production is the management emphasis, maximization of wood production the goal the allocation.

Effects on Vegetation

Chapter 2 details the vegetation mitigation measures and design criteria that would be implemented to avoid, eliminate, or reduce and minimize any potential adverse effects to vegetation resources from activities under the modified proposed action. All measures are effective and easily implementable. Design criteria support the Siskiyou Land and Resource Management Plan (1989) as well as other relevant laws, policies and regulations.

Effects Mechanisms and Analysis Framework

The interdisciplinary team reviewed the road network in the Sucker Creek Legacy Road Project area. Alternative 2 (modified proposed action) was developed through an interdisciplinary process where a team of resource specialists reviewed every road segment on NFS lands in the Sucker Creek watershed to identify which segments would benefit the most from road treatment (e.g., to reduce sediment inputs into streams supporting Coho salmon), and which road segments need to be maintained for access (e.g., for land management, emergency access, and recreation). The following criteria were used to assess needs for road segments for land management:

- Is there evidence of past management along or at the end of road segment (managed stand that had a final removal prescription applied in the past (including clear cutting, shelterwood or seed-tree cuts)?
- Has the stand received thinning in the past 5 years and will not need additional entries within the next 20 years (could include young stand thinnings such as release treatments and/or timber stand improvement under the Plantation Thinning and Hazardous Fuels Treatment EA (2002)?
- Has the stand received a commercial thinning (East Illinois Managed Stand Environmental Analysis ROD 2007) within the last 5 years and will not need additional entries within the next 20 years?
- Is there access to Matrix land that has not been managed in the past that could be programmed for harvest within the next 5 years?
- Are there roads that are needed for access to conduct thinning operations in managed stands to achieve Land and Resource Management objectives as amended by the NWFP?

Each road system was evaluated in the analysis regarding the access into areas of previous management. Some road systems were found to be redundant and could be removed from the network of system roads.

Roads that are main routes within the watershed are considered backbone road systems. These roads serve as multiple use roads that provide access to recreation, fires escape routes for the Oregon Caves National Monument, alternative route to the town of Williams and access to managed stands. These backbone road systems are listed in the transportation report.

Table 17. Road segments, acres of managed stands and land allocation proposed for storage under alternative 2-modified proposed action

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
4609053	35	Partial Retention Visual	**Storage**
	20	Riparian Reserve	**Storage**
4609056	82	Late Successional Reserves	**Storage**
	147	Matrix	**Storage**
	2	Partial Retention Visual	**Storage**
	3	Private Land	**Storage**
	6	Riparian Reserve	**Storage**
	2	Special Wildlife Site	**Storage**
4609911	86	Matrix	**Storage**
	25	Partial Retention Visual	**Storage**
	7	Riparian Reserve	**Storage**
	4	Special Wildlife Site	**Storage**
4609920	53	Matrix	**Storage**
	112	Partial Retention Visual	**Storage**
	17	Riparian Reserve	**Storage**
4611078	68	Matrix	**Storage**
	5	Riparian Reserve	**Storage**

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
4611910	105	Late Successional Reserves	**Storage**
4611914	46	Late Successional Reserves	**Storage**
4611955	22	Matrix	**Storage**
4611968	25	Matrix	**Storage**
	1	Riparian Reserve	**Storage**
4611988	14	Late Successional Reserves	**Storage**
	41	Matrix	**Storage**
4612013	24	Late Successional Reserves	**Storage**
4612541	19	Matrix	**Storage**
	4	Special Wildlife Site	**Storage**
4614017	53	Late Successional Reserves	**Storage**
4614024	107	Late Successional Reserves	**Storage**
4614047	191	Late Successional Reserves	**Storage**
4703100	6	Matrix	**Storage**
	20	Partial Retention Visual	**Storage**
	4	Riparian Reserve	**Storage**
4703146	9	Late Successional Reserves	**Storage**
4703433	66	Late Successional Reserves	**Storage**
	5	Matrix	**Storage**
4703440	49	Partial Retention Visual	**Storage**
	8	Riparian Reserve	**Storage**
4812575	11	Late Successional Reserves	**Storage**
4812577	77	Late Successional Reserves	**Storage**

Stands that require access within the next 5 years were identified through the analysis of the project. These stands could be entered within the next 5 years dependent on funding levels. The road systems in the table below include stands adjacent to backbone road systems. The acres listed include both young stands and intermediate/closed canopy types in managed stands. These stands would require access for timber haul routes and young stand thinning crews to conduct harvest and fuel reduction operations.

Table 18. Road segments, acres of managed stands and land allocation proposed for stormproofing under alternative 2-modified proposed action

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
4600000	214	Late Successional Reserves	Stormproof
4600150	12	Late Successional Reserves	Stormproof
4600180	179	Late Successional Reserves	Stormproof
4609000	5	Matrix	Stormproof

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
	301	Partial Retention Visual	Stormproof
	86	Riparian Reserve	Stormproof
	1	Special Wildlife Site	Stormproof
4611000	343	Late Successional Reserves	Stormproof
	251	Matrix	Stormproof
	189	Riparian Reserve	Stormproof
	4	Special Wildlife Site	Stormproof
4611019	283	Late Successional Reserves	Stormproof
4611063	349	Matrix	Stormproof
	89	Riparian Reserve	Stormproof
4611070	3	Backcountry Rec.	Stormproof
	1	Botanical	Stormproof
	159	Late Successional Reserves	Stormproof
	229	Matrix	Stormproof
	33	Partial Retention Visual	Stormproof
	25	Riparian Reserve	Stormproof
	6	Special Wildlife Site	Stormproof
4611079	63	Late Successional Reserves	Stormproof
	80	Matrix	Stormproof
	22	Riparian Reserve	Stormproof
4611952	118	Matrix	Stormproof
	1	Partial Retention Visual	Stormproof
	3	Riparian Reserve	Stormproof
4611953	23	Matrix	Stormproof
4611960	205	Late Successional Reserves	Stormproof
4611970	41	Matrix	Stormproof
	14	Riparian Reserve	Stormproof
4611973	34	Matrix	Stormproof
	3	Riparian Reserve	Stormproof
4612000	452	Late Successional Reserves	Stormproof
	16	Matrix	Stormproof
	11	Riparian Reserve	Stormproof
4612036	308	Late Successional Reserves	Stormproof
4612080	429	Late Successional Reserves	Stormproof
	97	Matrix	Stormproof
	5	Riparian Reserve	Stormproof
	4	Special Wildlife Site	Stormproof
4612098	164	Late Successional Reserves	Stormproof

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
	67	Matrix	Stormproof
	46	Riparian Reserve	Stormproof
4612430	37	Late Successional Reserves	Stormproof
4612472	24	Late Successional Reserves	Stormproof
	189	Matrix	Stormproof
	6	Riparian Reserve	Stormproof
	1	Special Wildlife Site	Stormproof
4612487	4	Matrix	Stormproof
4613000	485	Late Successional Reserves	Stormproof
	16	Matrix	Stormproof
	78	Partial Retention Visual	Stormproof
4613031	233	Late Successional Reserves	Stormproof
4613067	59	Matrix	Stormproof
	29	Partial Retention Visual	Stormproof
	1	Special Wildlife Site	Stormproof
4614000	653	Late Successional Reserves	Stormproof
4614014	41	Late Successional Reserves	Stormproof
4614046	139	Late Successional Reserves	Stormproof
4614048	232	Late Successional Reserves	Stormproof
4614449	54	Late Successional Reserves	Stormproof
4703000	5	Late Successional Reserves	Stormproof
	225	Matrix	Stormproof
	247	Partial Retention Visual	Stormproof
	28	Retention Visual	Stormproof
	89	Riparian Reserve	Stormproof
	5	Special Wildlife Site	Stormproof
4703051	121	Late Successional Reserves	Stormproof
	65	Matrix	Stormproof
4703156	66	Matrix	Stormproof
	5	Riparian Reserve	Stormproof
4703430	26	Matrix	Stormproof
	59	Partial Retention Visual	Stormproof
	8	Riparian Reserve	Stormproof
4703445	1	Late Successional Reserves	Stormproof
	11	Matrix	Stormproof
	1	Riparian Reserve	Stormproof
4703450	81	Partial Retention Visual	Stormproof
	14	Riparian Reserve	Stormproof

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
4703458	15	Partial Retention Visual	Stormproof
4812041	92	Late Successional Reserves	Stormproof
4812538	23	Partial Retention Visual	Stormproof
	11	Retention Visual	Stormproof

Roads not needed for 20 years or more access stands that in general either does not require thinning for 20 years or more to meet management objectives or already meet management objectives. Stands that fall under this category include stands that received overstory thinning that would not need additional thinning for in foreseeable future and or have roads that access the area in which the stand resides.

Table 19. Road segments, acres of managed stands and land allocation proposed for decommissioning under alternative 2-modified proposed action

Road Segment	Acres of Managed Stands Accessed by Road Segment	Land Management Allocation	Proposed Action
4600176	14	Late Successional Reserves	Decommission
4609947	7	Matrix	Decommission
	2	Partial Retention Visual	Decommission
4609955	16	Late Successional Reserves	Decommission
	1	Matrix	Decommission
4611085	1	Matrix	Decommission
4611950	43	Matrix	Decommission
	19	Riparian Reserve	Decommission
4611969	49	Late Successional Reserves	Decommission
4612069	107	Late Successional Reserves	Decommission
4612435	17	Late Successional Reserves	Decommission
4612461	61	Late Successional Reserves	Decommission
4612467	50	Late Successional Reserves	Decommission
4613066	6	Late Successional Reserves	Decommission
4614015	17	Late Successional Reserves	Decommission
4614040	129	Late Successional Reserves	Decommission
4614422	8	Late Successional Reserves	Decommission
4703426	6	Late Successional Reserves	Decommission
4703455	6	Partial Retention Visual	Decommission
4812539	2	Riparian Reserve	Decommission
	23	Partial Retention Visual	Decommission

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Effects

There are no direct effects of choosing the no-action alternative.

Indirect effects of the no-action alternative would maintain the current level of access in the short term. However in the long term roads that have issues with improper drainage or erosion would not receive treatment. The result of not treating these roads could be reduced access by road failure as observed in the 1997 flood, in which road segments were destroyed because drainage systems were not built to withstand flood events.

Failed roads in need of repair would increase costs to enter the road system and make timber sales unfeasible. Failed roads would also have an effect on costs for treating (thinning, pruning) young stands due to high walk-in costs. Increased costs to enter stands due to needed road maintenance or road reconstruction, would translate to reducing the funding available for treatments and therefore, reducing the number of acres to be treated.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

The direct effect of treating roads that access managed stands is maintaining the ability to manage vegetation as directed under the LRMP (1989) as amended by the NWFP (1994). The modified proposed action maintains access to managed stands and unmanaged matrix ground that may be included in the 5-year planning process for timber products. Maintaining access reduces access costs and allows more funding to be used to treat more acres of vegetation.

The modified proposed action would require removal of trees in areas around culverts that are stormproofed, removed for storage or removed during decommissioning. This vegetation would be utilized to meet coarse woody debris requirements within the allocation where the vegetation was removed (see hydrology and wildlife sections). Excess woody material remaining after the allocation requirements are met may be made available to the public under special forest products permits, and include but are not limited to: firewood, small saw timber, post and pole sales.

Cumulative Effects

The cumulative effects of this analysis are based on road access for vegetation treatments within multiple land allocations. Activities proposed under the modified proposed action reduce road density in the analysis area while maintaining access to 8,443 acres of managed stands located throughout the watershed.

Roads that are proposed to be decommissioned (table 19) are in areas where there are multiple roads entering a single stand or roads that are not needed due to land allocation objectives.

Proposed stormproofing activities will provide access to not only to backbone road systems but also roads that accesses managed stands (table 18). Stormproofing roads reduces costs for road maintenance for timber sales and reduce costs for young stand treatments.

This project will also provide access to future activities by placing roads into storage status (table 17). Placing roads into storage status would alleviate the issue of back-logged road maintenance that can cause roads to fail on their own or require maintenance or reconstruction to implement future treatments to managed stands.

Proposed activities maintain access and decreasing future sediment delivery by reducing roads that would not be maintained and eventually fail on their own.

Port Orford Cedar

Introduction

This analysis will follow the process established by the ROD and FEIS for the Management of Port Orford cedar in Southwest Oregon May 2004 for identifying a project's risk of spread of *Phytophthora lateralis (P. lateralis)* and provide management strategies for reducing risk of *P. lateralis* spread in the analysis area. Recommended management techniques for mitigation of the risk of spread will be identified.

Affected Environment

Port Orford cedar (POC) (*Chamaecyparis lawsoniana*) is native to a limited area along the Pacific Coast. On the Rogue River-Siskiyou National Forest. Updated inventory data shows Port Orford cedar occurs on approximately 133,000 acres on the Gold Beach, Powers, and Wild Rivers Ranger Districts. About 12,700 acres (8.7%) are infested with *Phytophthora lateralis*, the pathogen that causes POC root disease.

Many of the Port Orford cedar (POC) within the Wild Rivers Ranger District range in age from 200 to 400 years and are 20 to 60 inches in diameter. POC root disease has been present along the Oregon side of the Grayback Road going toward Happy Camp, California, since about 1960. It has infested the Grayback/Sucker Creek drainage near the Oregon Caves National Monument. POC are most often found in riparian areas within the Wild Rivers Ranger District. Generally, POC is within 100 feet of the stream; however, small groves of POC can be found on alluvial fans and benches along these streams (figure 13). Crown closure in the streamside areas are from 10 to 50 percent (USDA Forest Service 2004).

Phytophthora lateralis (PL) is spread via water or soil. A typical spread scenario involves infested soil being transported into an uninfested area on a vehicle or piece of equipment or, potentially, in infested water being transported in the tanks of fire engines or helicopter buckets during fire suppression activities. The infested soil falls off of the vehicle or spores are delivered via water and the pathogen first infects POC near the site of introduction. New spores from that infection are then washed downhill in surface water infecting additional hosts. This is especially lethal along drainages and creeks where infested water is channeled and flows near concentrations of healthy POC.

Alternative 2 proposed to treat a total of 186 miles of road with a total of 89.5 acres of measurable contributing POC and 30 acres of PL infestation.

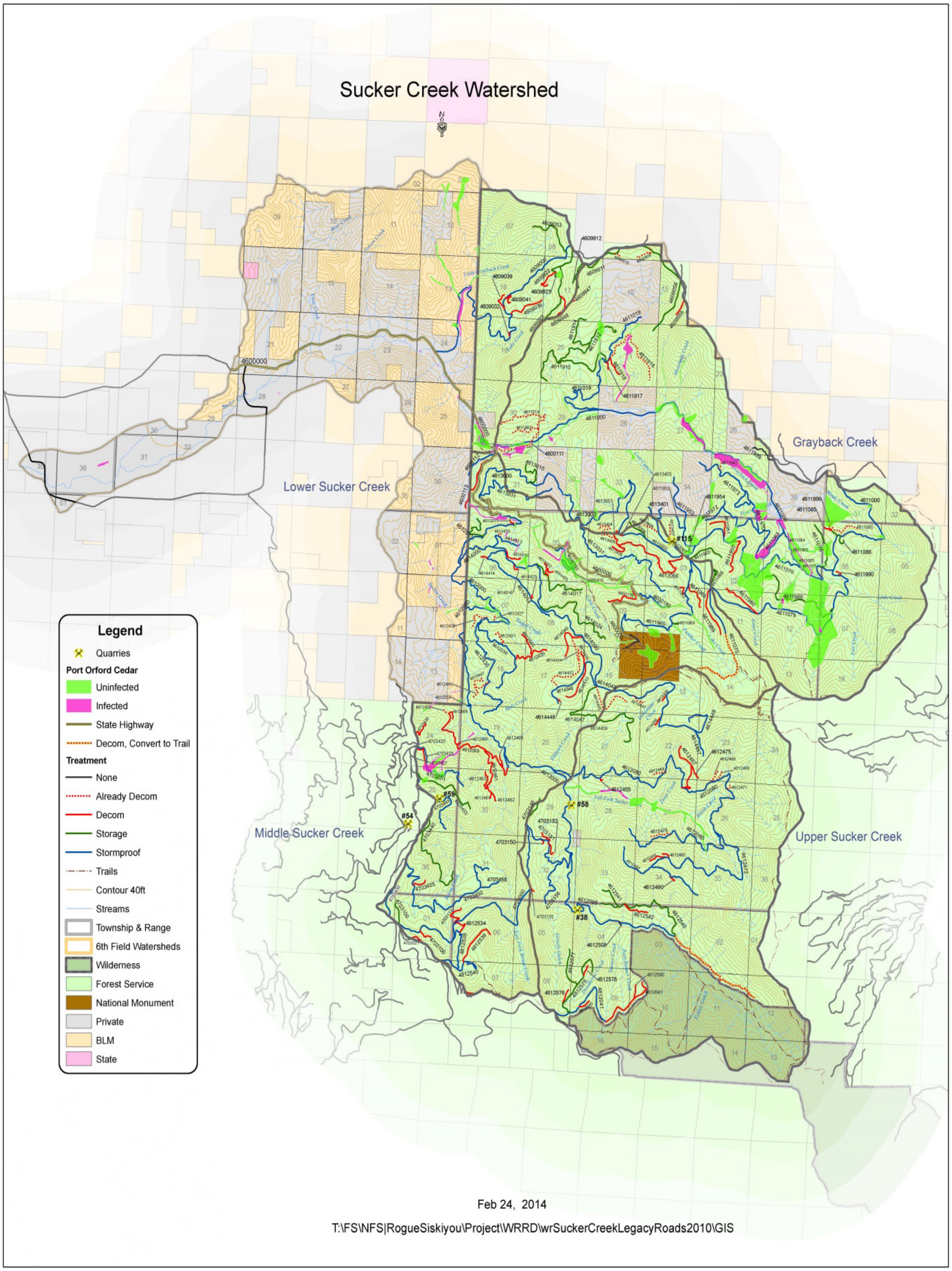

Figure 13. *Phytophthora lateralis* Infested and uninfested sites in the analysis area

Environmental Consequences

Effects Mechanisms and Analysis Framework

Port Orford cedar program objectives are to maintain POC as an ecologically and economically significant species on National Forest System lands. The objective is to provide cost-effective mitigation for controllable activities creating appreciable additional risk to important uninfected POC, not to reduce all risk to all trees at all cost (USDA Forest Service, USDI Bureau of Land Management 2004). Management slows the spread of the non-native pathogen *Phytophthora lateralis* enough to maintain POC's significant ecological and economic functions, without the cost of the management strategy exceeding its effects on the value of these functions.

For the Wild Rivers Ranger District, POC canopy cover of 6 percent or greater is the threshold for POC that measurably contributes to meeting management objectives.

The mechanisms for additional spread of *P. lateralis* are the use of heavy equipment to access and remove culverts and to recontour slopes and stormproof roads. The unit of measure is risk of spread of *P. lateralis* in addition to existing uncontrollable risk (such as along a primary access road).

Factors Affecting Pathogen Spread - The following factors influence PL spread and establishment: Character of site, type of carrier, time of year of transport event, and distance traveled and associated time elapsed.

Factors Affecting Risk of Infection - Jules et al. (2002) showed that the incidence of new POC infection was positively associated with: (1) distance to the nearest POC, (2) host abundance, and (3) catchment area.

Risk Regions - The range of POC is divided up into three main risk regions. The Wild Rivers Ranger District is in the Siskiyou Risk Region (with 20 percent high risk sites) (USDA Forest Service, USDI Bureau of Land Management 2004).

- High risk sites are defined as streamside POC within 100 feet of a road and non-streamside POC within 50 feet of a road.
- Low-risk sites are defined as streamside POC greater than 100 feet from a road and non-streamside POC greater than 50 feet from a road.
- Uninfested 7th field watersheds are watersheds with greater than 50 percent Federal ownership and with greater than 100 federal acres in stands that include POC, where at least the Federal lands are uninfested or essentially uninfested with PL. A map of all uninfested seventh field watersheds identified in the POC FSEIS is at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5316274.pdf

The Port Orford cedar risk key is used to clarify the environmental conditions that require implementation of one or more of the disease controlling management practices listed in the Record of Decision (ROD) and Land and Resource Management Plan Amendment for Management of Port Orford cedar in Southwest Oregon Siskiyou National Forest (USDA Forest Service 2004). Application of the risk key and application of resultant management practices makes this project consistent with the mid- and large-geographic and temporal-scale effects described by the POC FSEIS analysis, and permits the analysis to tier to the discussion of those effects (USDA Forest Service, USDI-Bureau of Land Management 2004).

Short-term and Long-term Potential for Spread of *P. lateralis*

Potential for the spread of *Phytophthora lateralis*, the pathogen that causes Port Orford cedar root disease is not simply a function of how many acres are entered. Rather, it is a function of a number of factors including acres entered with healthy POC, acres entered with PL, and management on these acres. Employing a planned combination of treatments can reduce probability of PL spread more than a single treatment. An integrated treatment program that uses a combination of reducing access, project scheduling, unit scheduling, washing equipment utilizing treated water using Ultra Clorox©, resistant POC planting, routing recreation use, restrictions placed on operations during summer rain events, and public education reduces the potential for spreading PL.

The Wild Rivers Ranger District is within the Siskiyou Risk Regions for POC. Of the 116,376 POC acres in the Siskiyou Risk Region 40 percent are considered to be high risk (46,549 acres). At this time approximately 31 percent of the high-risk site in the region is considered infested (12,801 acres). In 100 years, the predicted amount of infested acres in the Siskiyou Risk Region is predicted to increase to 51 percent of high-risk sites (approximately 59,439 acres).

These estimates cover all management activity for the Forest Service and BLM. A more complete discussion of risk and rate of spread can be found in the POC FSEIS (USDA Forest Service, USDI Bureau of Land Management 2004).

Alternative 1 – No Action

Direct and Indirect Effects

There would be no direct or indirect effects to the spread of *P. lateralis* in alternative 1. There would be no additional risk of spread of *P. lateralis* under alternative 1 because no project activities would occur within the Sucker Creek Legacy Roads Analysis area. Acres of PL infestation would continue to increase over time because of the presence of PL within upper portions of watersheds. Over the next 5 to 20 years, 4-5 acres of new root disease would be estimated to occur along streams that flow through areas of measurably contributing POC. Less than 1 acre of new root disease is expected annually where *P. lateralis* areas and healthy POC are adjacent to each other.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Project design criteria and mitigation measures to prevent or reduce the spread of *P. lateralis* are listed in chapter 2 and apply to all activities proposed for alternative 2 – modified proposed action. Therefore, under alternative 2, there would be a very low probability of additional risk of spread of *P. lateralis* (0 to 2 percent probability of occurring). Without project design criteria and mitigation applied, the relative probability would be very high (50.1 to 100 percent probability of occurring).

The modified proposed action would reduce the risk of *P. lateralis* by reducing road densities with the Grayback Sucker 5th field watershed. Most importantly, road densities in the six 7th field uninfested watersheds would be reduced by 6.6 miles. Putting 7.5 miles of road into storage will also provide at least 10 years of reduced risk of new infestations of *P. lateralis* in the 7th field uninfected watersheds. Total reduction of access through decommissioning and storage would involve 40 percent of roads in the 7th field uninfested watersheds.

The reduction of road densities will have indirect effects that would reduce risk of new *P. lateralis* infestations. This reduction of risk would help to preserve the POC cores in the watersheds.

Cumulative Effects

The effects of management prior to the 2004 POC Record of Decision are described as alternative 1 in the Final Supplemental Environmental Impact Statement Management of Port Orford cedar in Southwest Oregon (USDA Forest Service, USDI Bureau of Land Management 2004) and are incorporated by reference.

The 4611 road is an alternative route to the Williams area and serves as part of the Oregon Caves National Monument escape route. This road is heavily infested with PL. The 4600 is the main route to the Oregon Caves National Monument. This paved route has PL located in Grayback Campground and on a tributary just west of Caves Creek Campground. The 4612 is the main route to the Red Buttes Wilderness from the Illinois Valley. The vast majority of recreational traffic is during dry weather conditions, when the spread of *P. lateralis* is less likely (as discussed in detail in the POC FSEIS).

Other projects considered in cumulative effects analysis are vegetation activities as part of the East Illinois Managed Stand Environmental Analysis ROD 2007, Plantation and Hazardous Fuels Treatment Environmental Analysis ROD 2002 and Sucker Creek Channel and Floodplain Restoration Project. All projects utilize an integrated approach to management practices regarding reduction of risk of spread of *P lateralis*. Each projects risk of spread was 0 to 2 percent risk of spread therefore the total risk of spread of *P. lateralis* including this project is 0 to 8 percent.

Application of the risk key found in the POC report and the resultant management practices makes the action alternative for this project consistent with the mid- and large-scale geographic and temporal-scale effects described by the analysis in the POC FSEIS. These estimates cover all management activity for the Forest Service and BLM. A more complete discussion of risk and rate of spread can be found in the POC FSEIS (USDA Forest Service, USDI Bureau of Land Management 2004).

Conclusion

The Sucker Creek Legacy roads modified proposed action would utilize an integrated management approach to mitigate the spread of *P. lateralis*. The combination of project scheduling, unit scheduling, control of access, washing, utilizing uninfested water or treated water for operations, planting resistant POC, routing recreation use, and applying restrictions during summer rain events incorporates key recommendations to reduce the risk of *P. lateralis* spread or introduction of new infestations. This integrated management approach would reduce the risk of spread of *P. lateralis* to 0 to 2 percent POC ROD, Reference 2 (USDA Forest Service 2004).

Wildlife

Introduction

This section discloses the existing conditions for late-successional reserve and special status wildlife species and anticipated direct, indirect, and cumulative environmental effects that would result from the Sucker Creek Legacy Roads and Trails Project modified proposed action, based on the wildlife biological evaluation and specialist report.

Mitigation Measures and Project Design Criteria

Chapter 2 details the wildlife mitigation measures and design criteria that would be implemented to avoid, eliminate, or reduce and minimize any potential adverse effects to wildlife from activities under the modified proposed action. All measures are effective and easily implementable. Design criteria that support the Siskiyou Land and Resource Management Plan (1989) as well as other relevant laws, policies and regulations are available for review in the wildlife biological evaluation.

ESA Consultation to Date

To meet ESA Section 7 consultation requirements, road treatments proposed by alternative 2 for this project are included in the Forest Programmatic Consultation for Miscellaneous Projects. The Biological Assessment for this consultation is currently being developed by the Level 1 Team. This consultation with the US Fish and Wildlife Service is expected to be completed by October 1, 2014.

Scope of Analysis

Analyses for all wildlife species associated with this project are in the Wildlife Biological Evaluation and Specialist Report. Only those species affected or potentially affected by this project, as well as late-successional reserve habitat, are discussed in more detail in this EA.

Special Status Species

A variety of species and potential habitats occur within in the project area. Table 20 lists all federally listed species, Forest Service Region 6 sensitive, management indicator species and Northwest Forest Plan Survey and Manage species for the Rogue River –Siskiyou National Forest, and known presence of the species or suitable habitat in the project area. Species listed in table 22 where column 3 = “Yes” are either present or have habitat present in the Sucker Creek Legacy Roads Project area.

The project area is out of the range of species where column 3 = “No”. Therefore the project would have **no impact** on marbled murrelet, California slender salamander, Siskiyou salamander, Oregon spotted frog, northern waterthrush, evening fieldslug, Klamath rim pebblesnail, green sideband, traveling sideband, Crater Lake tightcoil, Siskiyou Hesperian, seaside hoary elfin, and coastal greenish blue butterfly. There is no habitat for these species in the project area and they will not be addressed further in this report.

Table 20. Terrestrial wildlife special status species presence in the Sucker Creek watershed

Wildlife Species (Common Name)	Scientific Name	Habitat or Species Present
Federally Threatened Species		
Northern spotted owl[1] (NSO)	*Strix occidentalis caurina*	Yes
NSO Designated Critical Habitat		Yes
Marbled Murrelet (MAMU)	*Brachyramphus marmoratus*	No
MAMU Designated Critical Habitat		No
Forest Service Sensitive Species		
Pacific Fisher	*Pekania pennanti (formerly Martes pennanti)*	Yes
Black Salamander	*Aneides flavipunctatus*	Yes
California Slender Salamander	*Batrachoseps attenuates*	No
Siskiyou Mtn. Salamander[2]	*Plethodon stormi*	No
Foothill yellow-legged frog	*Rana boylii*	Yes
Oregon Spotted Frog	*Rana pretiosa*	No
Northwestern Pond Turtle	*Actinemys marmorata marmorata*	Yes
Northern Bald Eagle[1]	*Haliaeetus leucocephalus*	Yes
American Peregrine Falcon	*Falco peregrinus anatum*	Yes
Harlequin Duck	*Histrionicus histrionicus*	Yes
Lewis' Woodpecker	*Melanerpes lewis*	Yes
White-headed Woodpecker[2]	*Picoides albolarvatus*	Yes
Northern Waterthrush	*Seiurus noveboracensis*	No
Pallid Bat	*Antrozous pallidus*	Yes
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	Yes
Fringed Myotis	*Myotis thysanodes*	Yes
California Wolverine	*Gulo gulo luteus*	Yes
Evening Fieldslug[2]	*Deroceras hesperium*	No
Klamath Rim Pebblesnail[2]	*Fluminicola sp. nov.*	No
Oregon Shoulderband[2]	*Helminthoglypta hertleini*	Yes
Chace Sideband[2]	*Monadenia chaceana*	Yes
Green Sideband	*Monadenia fidelis beryllica*	No
Traveling Sideband	*Monadenia fidelis celeuthia*	No
Crater Lake Tightcoil[2]	*Pristiloma arcticum crateris*	No
Siskiyou Hesperian	*Vespericola sierranus*	No
Johnson's Hairstreak	*Callophrys johnsoni*	Yes
Seaside Hoary Elfin	*Callophrys polios maritime*	No
Coastal Greenish Blue Butterfly (formerly insular blue)	*Plebejus saepiolus littoralis*	No
Gray Blue Butterfly	*Plebejus podarce Klamathensis*	Yes
Mardon Skipper	*Polites mardon*	Yes
Coronis Fritillary	*Speyeria coronis coronis*	Yes
Franklin's Bumblebee	*Bombus franklini*	Yes

Wildlife Species (Common Name)	Scientific Name	Habitat or Species Present
Western Bumblebee	*Bombus occidentalis*	Yes
California Shield-backed Bug	*Vanduzeeina borealis californica*	Yes
Siskiyou Short-horned Grasshopper	*Chloealtis aspasma*	Yes
Management Indicator Species		
Black-tailed deer	*Odocoileus hemionus colubianus*	Yes
Roosevelt elk	*Cervus elephus roosevelti*	Yes
American marten	*Martes americana*	Yes
Osprey	*Pandion haliaetus*	Yes
Pileated woodpecker and other woodpeckers	*Dryocopus pileatus*	Yes
Survey and Manage, Protection Buffer and Other NWFP special status		
Oregon red tree vole (Xeric zone)	*Arborimus longicaudus*	Yes
Del Norte Salamander	*Plethodon elongatus*	Yes
Flammulated owl	*Otus flammeolus*	Yes
Great gray owl	*Strix nebulosa*	Yes
Bats (fringed, long-eared, and long-legged myotis; silver-haired, pallid, and Townsend's big-eared bats)		Yes

[1] Also a Forest management indicator species
[2] Also a survey and manage species

Additional Species Associated with the Project Area

This project would not impact the following additional species because although they are associated with habitats that are present in the project area, they would be unaffected by project activities. These species will not be analyzed further in this report.

- California wolverine
- Peregrine falcon
- Harlequin duck
- California shield-backed bug
- Coronis fritillary
- Siskiyou short-horned grasshopper

Effects Common to Both Alternatives

Disturbance to terrestrial wildlife caused by roads and motorized use of roads can be classified into three general categories (Gaines et al. 2003). First is the change in habitat caused by the physical location of the road where vegetation is cleared and the soil surface covered or compacted. Vegetation is diminished or converted to different vegetation types and litter or trash may be present. Roadways are also susceptible to the establishment and spread of invasive plant species. The second type of disturbance is the physiological reaction (increased stress, alertness, flight) to the animals' perception of traffic or human presence on roads. This seems to depend on the individual's familiarity with the location and frequency of road use. An animal's response to this type of disturbance is usually avoidance of the roadway and sometimes a change in use of otherwise suitable habitat in the vicinity of the roadway. The degree of disturbance response varies for different species and is the topic of many studies, particularly elk, deer, and many carnivores. This type of disturbance has also been documented to disrupt animal breeding and bird nesting. (MacAurthur et al. 1982; Gabrielson and Smith 1995; Wasser et al. 1997 as cited in Gaines et al. 2003; Taylor and Knight 2003; Wisdom et al. 2004; George and Crooks 2006; Riley 2006).

Considerations for Cumulative Effects

Cumulative effects are evaluated based on direct and indirect effects of proposed project activities in conjunction with similar effects of other past, present or foreseeable future activities within a common area of influence or occurring in a similar timeframe. For this project, effects such as localized, short-term disturbance of aquatic habitat at culvert locations during low summer flows would be considered with other projects that may impact aquatic habitat in the same stream within the same timeframe. For wildlife, the area considered for cumulative effects varies by species based on habitat requirements, mobility of the animals, and the level of effects evaluation based on status. For example, effects to management indicator species are considered for the population and habitat distribution at the forest level.

Other Federal actions considered within the Sucker Creek Legacy Roads project area that would result in similar impacts to wildlife include the 5-acre Cedar Gulch Placer Mining project in Sucker Creek and the Sucker Creek Channel and Floodplain Restoration project. In addition, ongoing regulated placer mining and suction dredging, and manual gold panning occurs in streams throughout the project area.

Removal of hazard trees at developed recreation sites and along roads open for public use occur annually with applied design criteria and mitigations for resource impacts. Additional road maintenance activities such as culvert cleaning, removal of fallen trees, brushing and surface grading also occur on open roads annually as needed. These activities also require design criteria to minimize or avoid resource impacts.

Approximately 480 acres of the Sucker Creek watershed is the Oregon Caves National Monument. For this analysis, it is assumed that management of these lands would continue to serve public recreation and resource conservation objectives designed to minimize impacts to wildlife species. Existing road use is expected to continue with no anticipated new road construction.

Approximately 2,890 acres within the Sucker Creek watershed are privately owned. It is assumed that timber harvest activity and mining have occurred on most of these lands in the past and will continue indefinitely. It is also assumed that existing roads on these lands will continue to be used and contribute to road related impacts at existing levels.

Effects on Late-Successional Reserves (LSR)

East IV/Williams-Deer LSR

The East IV/Williams-Deer LSR spans National Forest and BLM lands from the headwaters of the West Fork and East Fork of the Illinois River in Del Norte County, California just east of Oregon Mountain, eastward to the ridgeline dividing the Sucker Creek watershed from Carberry Creek watershed on the Siskiyou Mountains Ranger District, then northward onto BLM lands in the Williams Creek, Murphy Creek and Deer Creek watersheds. The East IV portion of this LSR is approximately 62,809 acres of federal lands and the Williams-Deer portion is 59,717 acres.

The East IV portion of this LSR is within the Sucker Creek watershed analysis area and supports northern spotted owls, fishers, marten, bats, goshawks, mollusks and other species associated with late successional habitat.

The Southwest Oregon Late Successional Reserve Assessment (USDA Forest Service, 1995) estimated that the LSR is 35 percent managed stands and approximately 36 percent late-successional forest, of which 7 percent is interior late-successional habitat. This LSR provides high elevation true fir forest connectivity between the mountains of the eastern Illinois Valley and the coastal part of the Siskiyou Mountains. It also provides connectivity between the Rogue and Illinois River Valleys and between the BLM, Klamath National Forest, and Six Rivers National Forest. According to the LEMMA Gradient Nearest Neighbor method (GNN) vegetation 2000 dataset developed by Oregon State University for the Klamath Province, (http://www.fsl.orst.edu/lemma/), approximately 19,375 acres of this LSR within the Sucker Creek /Grayback subwatersheds is identified as late successional and old growth habitat (LSOG = 'Y').

In the Sucker Creek watershed, this LSR serves an "elevator effect" through corridors of late-successional forest habitat from lower elevations near the Illinois Valley floor to the ridgelines of these watersheds at over 5000 feet. These habitat corridors allow species to respond to seasonal temperature changes, precipitation and food availability.

According to current Forest GIS data, there are approximately 216 miles of roads in the entire East IV LSR. Approximately 113 of these miles are within the Sucker Creek Legacy Roads project area. The East IV LSR comprises approximately 29,450 acres (46 square miles) of the project area with an existing road density of approximately 2.5 miles/square mile.

The Grayback/Sucker Pilot Watershed Analysis (USDA Forest Service 1995) compared the structure and connectivity of older forest habitat in these watersheds between 1948 and 1995. By 1995, the forest was much more fragmented with fewer large patches of older forest habitat than in 1948. In fact, the analysis found virtually no contiguous patches of this habitat greater than 500 acres in these watersheds attributed to past timber harvest and road building. The majority of existing large patches older forest habitat in these subwatersheds is at higher elevations in the white fir forest types. LSR management objectives emphasize maintenance and development of late successional habitat. Because the East IV LSR has a history of extensive timber production and fire exclusion, there is a need to retain adequate road access to areas that require intentional vegetation management in order to restore and enhance forest succession and retain special habitats such as hardwoods and meadows (NFWP ROD, 1994 pp B-4 thru B-9). Silvicultural treatments in LSR may occur in stands up to 80 years old regardless of the origin of the stands (human or natural) and include thinning and prescribed burning. The purpose of these treatments must benefit the creation or maintenance of late successional habitat (NFWP ROD, 1994 p C-12).

In addition, existing roads in this LSR provide access to existing developed recreation opportunities, administrative facilities and the Oregon Caves National Monument, mining claims, and private timber lands.

Alternative 1 – No Acton

Direct, Indirect and Cumulative Effects

There are no direct or indirect effects on late-successional habitat from taking no action. There would be no project activities additive to effects of ongoing mining or road maintenance that would cumulatively impact late-successional habitat within the East IV LSR.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Proposed stormproofing would have no direct effects on late-successional habitat and may indirectly have beneficial effects where drainage problems are repaired and prevent or minimize potential storm damage to riparian habitat within the LSR. Road storage, decommissioning and conversion of roads to trails would remove 39 miles of open roads from the East IV LSR which would reduce road density from 2.5 to 1.6 miles per square mile within this LSR in the project area. However, road density would slightly increase in the future were roads in storage to be reopened for project work, but it is not likely that they would all be reopened at the same time.

Furthermore, proposed road storage and decommissioning under alternative 2 would result in a reduction of the influence of roads on habitat quality within LSR in the analysis area from the existing 14 percent to 12 percent though some of this influence would also return in the future where stored roads would be opened for projects. Proposed storage, decommissioning and conversion of roads to trails would reduce acres of potential habitat avoidance in the LSR from 44 percent to approximately 31 percent again with the caveat that some would return where roads in storage are reopened for future projects.

Implementation of Sucker Creek Legacy Roads Project alternative 2 would benefit the East IV LSR by reducing road density and habitat disturbance and degradation caused by roads while retaining adequate access for existing resource use, administrative sites, and vegetation management that would also benefit LSR in the future as described in the vegetation management section of this EA.

Cumulative Effects

There are no direct or indirect effects to LSR from alternative 2 that would be additive to cumulative effects to late-successional habitat from other projects such as mining and annual road and recreation site maintenance.

Conclusion

Implementation of alternative 1 would be neutral to late-successional reserve values while implementation of alternative 2 would be beneficial to LSR values as a result of reducing road-related effects to late-successional habitat while retaining adequate access for future LSR habitat enhancement and protection from wildland fire.

Effects for Northern Spotted Owl (Federally Listed Species) and Habitat

Northern Spotted Owl

Status: Federal – Threatened; State of Oregon – Threatened

Northern Spotted Owl Sites within the Sucker Creek Legacy Roads Project Area

The Forest northern spotted owl database identifies 20 spotted owl sites within the project area, 14 of which are in the East IV LSR. The 1.3 mile home ranges for 5 additional sites overlap roads proposed for treatment by this project. Together, these 25 sites are locations with evidence of continued use by spotted owls, including breeding, repeated location of a pair or single birds during a single season or over several years, presence of young before dispersal, or some other strong indication of continued occupation. The majority of these sites were established through protocol surveys completed in the late 1980s and early 1990s. There have been no protocol surveys completed for the Sucker Creek Legacy Roads project. As a consequence, unsurveyed suitable nesting, roosting and foraging (NRF) habitat in the analysis area is considered occupied by spotted owls for the purposes of this analysis.

Northern Spotted Owl Habitat in the Project Area

For this analysis, the area used to evaluate effects to northern spotted owl habitat is within a 1.3 mile buffer of roads proposed for treatments under alternative 2. This buffer distance represents the estimated home range size for northern spotted owls in the Oregon Klamath Province and extends beyond the boundary of the Sucker Creek watershed. The total analysis area is 72,710 acres. Approximately 76 percent of it is Rogue River-Siskiyou National Forest System lands. Table 21 displays owl habitat acreages on NFS lands within this analysis area by land allocation and designated critical habitat for spotted owls.

Table 21. Acres of northern spotted owl habitat within the spotted owl analysis area and designated critical habitat

Sucker Creek Legacy Roads Project Spotted Owl Analysis Area	Total Acres*	NRF Habitat Acres* (% total)	Total Capable Habitat Acres* (% total)	Dispersal Only (% total)*
All Ownerships	**72,710**	46,798 (64)	10,160 (14)	12,246 (17)
Rogue River-Siskiyou NF	**51,770**	35,395 (68)	6,464 (12)	7,410 (14)
RRSNF Land Management Allocations				
Late-Successional Reserves	**26,286**	17,248 (66)	3,593 (14)	4,248 (16)
Riparian Reserves (within Matrix only)	**2,481**	1,739 (70)	239 (10)	400 (16)
Matrix	**6,252**	3,698 (59)	1,071 (17)	1,084 (17)
Designated Critical Habitat for Northern Spotted Owl within Sucker Creek 5th field watershed				
Critical Habitat Subunit 9 KLW-4	**24,927**	16,967 (68)	3,094 (12)	3,623 (14)

*(Source: Interagency Regional Monitoring Program owl habitat relative habitat suitability model and habitat classification "owlhabrhs1").

Nesting, Roosting and Foraging Habitat

Nesting, roosting and foraging habitat for northern spotted owls is used for nesting, roosting, and foraging and may also function as dispersal habitat. Generally, this habitat is multistoried, 80 years old or more with at least 60 percent canopy closure; a high incidence of large trees with various deformities (e.g., large cavities, broken tops, mistletoe infestations, and other evidence of decadence); large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for owls to fly (Thomas et al. 1990).

Nesting, roosting and foraging habitat in southwest Oregon is typically mixed-conifer habitat with recurrent fire history, patchy habitat components, and a high incidence of wood rats or red tree voles, which are high quality spotted owl prey species in the area. It may consist of somewhat smaller tree sizes and more tree species diversity within each stand than NRF habitat northwestern Oregon. One or more important habitat components, such as dead down wood, snags, dense canopy, multistoried stands, or mid-canopy habitat, might be lacking or even absent, however, southwest Oregon NRF can support nesting owls if those components are available across the immediate landscape.

The Forest generally defines spotted owl NRF habitat in the Oregon Klamath Province as stands with an average of 21 inches DBH with a minimum canopy closure of 60 percent. For this analysis, a habitat layer from the Pacific Northwest Interagency Regional Monitoring Program derived from the LEMMA Gradient Nearest Neighbor method (GNN) vegetation 2000 dataset developed by Oregon State University (http://www.fsl.orst.edu/lemma/) was used.

Capable habitat for the northern spotted owl is forest land that is currently not habitat but can become NRF or dispersal in the future, as trees mature and canopy fills in.

Dispersal is a subcategory of "all dispersal" habitat for northern spotted owls. Dispersal habitat is forested habitat with canopy closure more than 40 percent, average diameter greater than 11 inches, and flying space for owls in the understory but does not provide the components found in NRF. It provides temporary shelter for owls moving through the area between NRF habitat and some opportunity for owls to find prey, but does not provide all requirements to support an owl throughout its life (Thomas et al. 1990). Owls also disperse through NRF habitat, but the term "dispersal-only" is used to refer to habitat that does not meet NRF habitat criteria, but has adequate cover to facilitate movement between areas of NRF habitat.

Designated Critical Habitat

Designation of critical habitat serves to identify lands considered essential for the conservation and recovery of listed species. The functional value of critical habitat is to preserve options for the species' eventual recovery. Critical habitat for the northern spotted owl was first designated in 1992 with the most recent revision finalized on December 4, 2012 which became effective January 3, 2013 (77 FR 233: 71876-72068).

Critical habitat is defined as (1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the listed species and may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by the species at the time it is listed that are essential for the conservation of a listed species. Regulations focus on the "primary constituent elements," or PCEs, in identifying these physical or biological features. The PCEs essential to the conservation of the northern spotted owl are forested lands that are used or likely to be used for nesting, roosting, foraging, or dispersing.

The Sucker Creek Legacy Roads Project is located within proposed Critical Habitat Unit (CHU) 9 subunit 4, referred to as "Klamath West 4" (KLW-4). CHU 9 contains 1,290,687 ac (522,322 ha) of the western portion of the Klamath Mountains Ecological Section M261A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994c, Section M261A). A long north-south trending system of mountains (particularly South Fork Mountain) creates a rainshadow effect that separates this region from more mesic conditions to the west. This region is characterized by very high climatic and vegetative diversity resulting from steep gradients of elevation, dissected topography, and the influence of marine air (relatively high potential precipitation).

The KLW-4 subunit consists of approximately 158,402 acres in Josephine and Jackson Counties, Oregon, and Del Norte and Siskiyou Counties, California and includes lands managed by the Forest Service, BLM and the National Park Service managed as directed by the NWFP (1994). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, losses due to wildfire, effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall spotted owl population and provide north-south and east-west connectivity between subunits and critical habitat units.

The Service has determined that all unoccupied and likely occupied areas in this subunit are essential for conservation of the species to meet the recovery criterion that calls for continued maintenance and recruitment of spotted owl habitat (USFWS 2011, RA-32). The increase and enhancement of spotted owl habitat is necessary to provide long-term viability of populations of spotted owls by supporting population expansion, successful dispersal, and buffering from competition with barred owls. More detailed information about critical habitat is described in the BE.

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

There would be no effects on spotted owls from taking no action. If occurring, disturbance would continue at existing levels. Existing use of open roads for recreation, mining access, private land access, and administrative purposes within the spotted owl analysis area is expected to continue indefinitely. Federal activities that require use of these roads would continue to implement measures to minimize effects to spotted owls. There are no direct or indirect effects to spotted owls from alternative 1 that would be additive to cumulative effects when combined with past, present or foreseeable activities in the Sucker Creek spotted owl analysis area.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Potential direct effects to spotted owls under alternative 2 include short-term vegetation removal and noise and visual disturbance.

In summary, vegetation removal would be limited to trees less than 80 years in age from culvert locations where drainage improvements are needed, or small trees growing in roads proposed for decommissioning or storage that may be cut to access culverts and other treatments locations on the road in order to restore drainage and soil productivity. Short-term impacts of the decommissioning and storage activities include removal of vegetation and trees less than 80 years that occur within the roadbed or fill that would be treated to improve drainage and soil productivity. The total direct impacts of vegetation removal from proposed road treatments would affect less than 4 acres of vegetation less than 80 years in age that may provide dispersal or foraging habitat throughout the project area. This acreage is spread throughout the project area among small sites along existing roads, and therefore would not measurably impact the functionality of surrounding NRF or dispersal owl habitat. Impacts to primary prey such as wood rats and red tree voles from vegetation clearing for road and culvert treatments and associated noise are anticipated to be minimal because these species are expected to use better quality habitat away from roads.

Activities that produce noise above ambient levels during the spotted owl breeding season may cause owls to abandon a nest site or flush from a nest and result in reproductive failure if the noise occurs within the disturbance distances during the critical breeding period. Use of heavy equipment or chainsaws and other mechanized equipment that produce noise above ambient levels for project activities would be restricted between March 1 and June 30 unless the district biologist or designee determines that a particular project site is not within the disturbance distance of NRF habitat or protocol surveys determine that NRF habitat next to a site is not occupied. This seasonal restriction would minimize impacts to spotted owls from noise and visual disturbance.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue with design criteria where applicable to minimize impacts to spotted owls and their habitat.

Alternative 2 would implement a seasonal restriction on noise producing activities during the critical breeding season for owls. Vegetation removal for culvert and drainage improvements and road decommissioning and storage activities are expected to maintain the functionality of existing owl habitat. Implementation of alternative 2 would benefit owls and prey species where roads are decommissioned or put into storage thereby reducing the amount of habitat potentially avoided by these animals. There are no direct or indirect effects of the project that would be additive to past, present or foreseeable activities that would contribute to cumulative effects to spotted owls.

Determination for Spotted Owls

The Forest expects no appreciable effects from implementation of the Sucker Creek Legacy Roads Project alternative 2 and makes the determination of **"May Affect, Not Likely to Adversely Affect"** northern spotted owls or their habitat with the following rationale:

1. Vegetation removal for culvert and road decommissioning work may occur at the edges of existing NRF and dispersal habitats, but would not result in a measurable change to the functionality or reduce the canopy cover of these habitat types where they exist next to roads.
2. Project activities that produce noise above ambient levels within disturbance distances would be restricted between March 1 and June 30, the critical breeding season for spotted owls. This means no operation of chainsaws or other mechanized equipment within 65 yards of unsurveyed NRF habitat or operation of heavy equipment within 35 yards of NRF habitat unless protocol surveys determine the habitat to be unoccupied by spotted owls.
3. Proposed road decommissioning and storage would benefit owls and their prey in the long term where road impacts such as loss of snags and large down wood, potential habitat avoidance due to disturbance would diminish and habitat quality would improve.

Designated Critical Habitat

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

Potential direct effects to designated critical habitat for spotted owls would include any disturbance or removal of primary constituent elements described in the BE.

Under alternative 1, designated critical habitat within 164 feet of currently open roads would continue to experience existing road influence on habitat quality. The impacts of hazard tree removal, permitted firewood gathering, mining access, road maintenance activities and general use of open roads are evaluated and designed to minimize or avoid effects to critical habitat under separate consultation with the USFWS. Some roads may be closed in the future under the Forest travel management plan or smaller projects which would improve local habitat quality.

There are no direct or indirect effects from alternative 1 that would be additive to cumulative effects to designated critical habitat when combined with past, present or foreseeable activities in the Sucker Creek spotted owl analysis area.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

Potential direct effects of alternative 2 to designated critical habitat for spotted owls would be any impacts from vegetation removal for culvert work and road decommissioning or storage to primary constituent elements described in the BE.

In summary, vegetation removal would be limited to trees less than 80 years in age from culvert locations where drainage improvements are needed, or small trees growing in roads proposed for decommissioning or storage that may be cut or removed for surface ripping to restore drainage and soil productivity. Removal of vegetation for culvert work is not expected to appreciably impact primary constituent elements or the functionality of critical habitat because these are trees that have grown in the road fill since road construction, and the clearings would be small and scattered throughout the project area. This would be vegetation that provides marginal dispersal or forage habitat due to the influence of roads. Trees that are removed at these locations would be distributed to provide woody debris in riparian areas, critical owl habitat and late successional habitat. Because this acreage is spread throughout the project area into small sites along roads and not all of the culverts would require this amount of vegetation removal, the functionality of critical habitat is expected to be maintained after project implementation.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue with design criteria where applicable to minimize impacts to designated critical habitat for spotted owls.

Alternative 2 would include placement of any excess large woody material from vegetation removal from culvert and drainage improvements within critical habitat to supplement primary constituent elements. Implementation of alternative 2 would benefit critical habitat where roads are decommissioned or put into storage thereby increasing the amount of quality habitat available for owls over the long term. There are no direct or indirect effects of the project that would be additive to past, present or foreseeable activities and contribute to cumulative effects to designated critical habitat for spotted owls.

Determination for Designated Critical Habitat

The Forest expects no appreciable effects from implementation of the Sucker Creek Legacy Roads Project alternative 2 and makes the determination of **"May Affect, Not Likely to Adversely Affect"** designated critical habitat for northern spotted owls with the following rationale:

1. Vegetation removal for culvert and road decommissioning work would occur at small locations spread throughout critical habitat unit KLW-4 for a maximum of 4 acres and the functionality of this critical habitat unit would be maintained.
2. Trees removed from culvert work locations within KLW-4 would be placed for woody debris within the unit to supplement primary constituent elements of critical habitat.
3. Proposed road decommissioning and storage would benefit critical habitat in the long term where road impacts such as loss of snags and large down wood, potential habitat avoidance due to disturbance would diminish and habitat quality would improve.

Effects on Region 6 Sensitive Species

Background information about species listed below is primarily from the Region 6 Interagency Special Status and Sensitive Species Program website: http://www.fs.fed.us/r6/sfpnw/issssp/ , USFWS Species Fact Sheets, and Species Conservation Assessments on file in the project record.

Black Salamander

Status: USDA Forest Service Region 6 – Sensitive; U.S.D.I. Bureau of Land Management, Oregon – Bureau Sensitive; Oregon State Sensitive - Peripheral; Oregon State imperiled (S2), list 2 – taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.

The species complex occurs from southwestern Oregon to northwestern California, with several disjunct populations including one as far south as Santa Cruz, California, although a potential to describe 2-4 species across this area is currently being considered. In Oregon, the current known range of the species is about 187,400 ha (463,075 acres), primarily in the Applegate watershed of Jackson County, Oregon, adjacent to the east of Sucker Creek watershed. However, a portion of this range is uncertain at this time. The five site records nearest Cave Junction are uncertain (R.B. Bury, R.S. Nauman, D.R. Clayton, pers. comm.). These localities and this portion of the potential species range warrant confirmation; black salamanders can be confused with other species, such as its congener the clouded salamander, *A. ferreus*, which is thought to occur at these locations. One of these unconfirmed locations is along Sucker Creek.

Surveys for black salamanders were not conducted for the Sucker Creek Legacy Roads Project. Potential habitat for the black salamander in the project area occurs in riparian vegetation, rocks and litter at culvert locations, and in moist, rocky road cuts. As mentioned previously, there is one unconfirmed black salamander location in the Sucker Creek drainage.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Direct effects to salamanders include potential harm or mortality if salamanders are on the road during traffic, and reduction of habitat quality adjacent to roads associated with pollution from road use. NWFP standards and guidelines for riparian reserves prohibit removal of down woody debris from riparian reserves unless it is excessive and Aquatic Conservation Strategy objectives would not be adversely affected (USDA and USDI 1994). The impacts of hazard tree removal, permitted firewood gathering, road maintenance activities and general use of open roads are evaluated and designed to minimize or avoid effects to riparian habitat in order to comply with the NWFP

Aquatic Conservation Strategy and because it is important to numerous special status species. Indirect effects of taking no action to improve drainage problems such as undersized culverts may result in disruption of riparian habitat if culverts become clogged or overwhelmed during storm events, and possible mortality of salamander eggs or larvae from fast-flowing water or sediment delivery associated with drainage problems.

Cumulative Effects

Forest-implemented projects in riparian habitat would include measures to protect and minimize impacts to riparian habitat and associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat. Indirect effects that result in disruption of riparian habitat or increased sediment delivery from taking no action under alternative 1 may be additive to cumulative effects to black salamanders in the Sucker Creek Legacy Roads Project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**" of black salamanders.

Alternative 2

Direct and Indirect Effects

Black salamander adults and young may be found in culverts during proposed culvert treatments. It has been found that salamanders often utilize pipe culverts with large debris in them and open bottom (arch) culverts which are believed to facilitate movement of these animals through culvert structures better than culverts with overhang or lack of debris or streambed substrate which is often a problem in undersized culverts (Sagar 2004, White 2004, Ward 2005, Arizona Game and Fish 2006).

Any salamanders present in the culverts, vegetation, down wood or other surface substrate could be harmed or harassed during proposed activities such as culvert removal, replacement, and cleaning, and ditch cleaning and road fill clearing for drainage improvement. In addition, vegetation clearing for culvert work would remove potential habitat such as down woody debris from these sites and possibly change the site microclimate by increasing exposure sunlight and reducing moisture. This may impact individuals or habitat present at numerous culvert locations in the project area (potentially 465 sites). It is not expected that all of these sites provide suitable habitat conditions, especially where these activities would occur in the late summer before substantial fall rains. The estimated maximum amount of vegetation clearing for culvert work is 4 acres distributed throughout the project area. Using the forest riparian reserve GIS data for all streams and waterbodies as a proxy for riparian habitat, there are approximately 10,662 acres of riparian habitat within the forest boundary in the project area. Potential impacts on up to 4 acres of riparian habitat at culvert locations within the project area would affect less than 0.5 percent of the available riparian habitat in the project area. The presence of black salamanders has not been confirmed in this project area, so there is a low likelihood that individuals of this species would be directly impacted by project activities. Any salamanders found during culvert work would either be left unharmed or moved to suitable moist, shaded habitat adjacent to but undisturbed by the work site if there is potential for harm.

Long-term potential beneficial effects of alternative 2 to black salamanders is that proposed culvert replacements will ensure right-sized culverts that minimize potential for disruption of stream habitat conditions, high flow velocities through the culverts and will be designed to maintain stream habitat connectivity. Road decommissioning and storage would improve riparian habitat quality and availability by removing the effects of roads. Culvert removal associated with proposed road decommissioning would result in long-term restoration of natural stream habitat structure and riparian habitat quality.

Cumulative effects

Forest implemented projects in riparian habitat would include measures to protect the quality of the habitat and minimize impacts to associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat. Potential impacts to salamanders from removal of riparian vegetation and disturbance of culvert locations in the project area under alternative 2 may be additive to cumulative effects to black salamander habitat in the Sucker Creek watershed.

Conclusion

Considering the direct, indirect and cumulative effects and long-term beneficial effects of alternative 2 and the lack of confirmed occurrence of black salamanders in the project area, implementation of Sucker Creek Legacy Roads alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**" of black salamanders.

Foothill yellow-legged frog

Status: Federal - USDA FS Sensitive (Region 6); State of Oregon – Vulnerable

The Forest NRIS database contains no records of foothill yellow-legged frogs in the Sucker Creek watershed. Stream surveys of Sucker Creek in 2007 did not locate any yellow-legged frogs, but did identify suitable frog habitat along Sucker Creek. It is assumed that much of the riparian habitat in the project area would be suitable for these frogs.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Direct effects to foothill yellow-legged frogs include potential harm or mortality if frogs are on roads during traffic, and reduction of riparian habitat quality adjacent to roads associated with pollution from road use. As mentioned previously, NWFP standards and guidelines for riparian reserves emphasize maintaining habitat quality in riparian reserves to meet Aquatic Conservation Strategy objectives. The impacts of ongoing hazard tree removal, permitted firewood gathering, road maintenance activities and general use of open roads are evaluated and designed to minimize or avoid effects to riparian habitat in compliance with the NWFP Aquatic Conservation Strategy (chapter 4) and because it important to numerous special status species. Indirect effects of taking no action to improve drainage problems such as undersized culverts may result in disruption of riparian habitat if culverts become clogged or overwhelmed during storm events, and possible mortality of frog eggs or larvae from fast-flowing water or increased sediment delivery associated with drainage problems.

Cumulative Effects

Forest-implemented projects in riparian habitat would include measures to protect and minimize impacts to riparian habitat and associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat. Indirect effects that result in disruption of riparian habitat or increased sediment delivery from taking no action under alternative 1 may be additive to cumulative effects to foothill yellow-legged frogs in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species"** of foothill yellow-legged frogs.

Alternative 2

Direct and Indirect Effects

Adult frogs including foothill yellow-legged frogs are often found in and around culverts of all types as they move through riparian habitat corridors (Yanes 1995, Peek and Kahndwala 2006,Garcia and Associates 2008). Culverts can impede passage of frogs through riparian habitat if they are installed with a steep gradient or if their outlet overhangs the stream.

Any frogs, larvae or egg masses present in or around culverts proposed for treatment, could be harmed or killed during activities such as culvert removal, replacement, and cleaning, and ditch cleaning and road fill clearing for drainage improvement. Any frogs seen on-site during proposed treatment activities will be moved to suitable adjacent habitat to avoid direct harm. In addition, vegetation clearing for culvert work may remove or disturb riparian vegetation and possibly change the site microclimate by increasing exposure sunlight and reducing moisture. Frogs do bask in sunlight so the change in microclimate may or may not be a negative impact for frogs. The estimated maximum amount of vegetation clearing for culvert work is 4 acres distributed throughout the project area. Using the forest riparian reserve GIS data for all streams and waterbodies as a proxy for riparian habitat, there are approximately 10,662 acres of riparian habitat within the forest boundary in the project area. Potential impacts on up to 4 acres of riparian habitat at culvert locations within the project area would affect less than 0.5 percent of the available riparian habitat in the project area.

Long-term potential beneficial effects of alternative 2 to foothill yellow-legged frogs is that proposed culvert replacements will ensure right-sized culverts that minimize potential for disruption of stream habitat conditions, high flow velocities through the culverts and will be designed to maintain stream habitat connectivity. Road decommissioning and storage would improve riparian habitat quality and availability by removing the effects of roads. Culvert removal associated with proposed road decommissioning would result in long-term restoration of natural stream habitat structure and riparian habitat quality.

Cumulative Effects

Forest implemented projects in riparian habitat would include measures to protect the quality of the habitat and minimize impacts to associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat and frogs. Potential direct impacts to foothill yellow-legged frogs from proposed culvert work alternative 2 may be additive to cumulative effects to foothill yellow-legged frogs in the Sucker Creek watershed.

Conclusion

Considering the direct, indirect and cumulative effects and long-term beneficial effects of alternative 2 to riparian habitat, implementation of Sucker Creek Legacy Roads alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**" of foothill yellow-legged frogs.

Northwestern Pond Turtle

Status: Federal - USDA FS Sensitive (Region 6); State of Oregon – Critical

The Forest NRIS wildlife database has no records of northwestern pond turtles in the project area. The nearest recorded locations are approximately 11 miles northwest of the project area in Josephine Creek. Potential suitable habitat in the project area for this species is present in eddies and backwater areas of the larger creeks such as Sucker Creek where sand bars and soft substrate is available in the creek channels. Other small wet or ponded areas and lakes in the project area also provide potential habitat.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Direct effects to the northwestern pond turtle include potential harm or mortality if turtles are on roads during traffic, and reduction of riparian habitat quality adjacent to roads associated with pollution from road use. As mentioned previously, NWFP standards and guidelines for riparian reserves emphasize maintaining habitat quality in riparian reserves to meet Aquatic Conservation Strategy objectives. The impacts of ongoing hazard tree removal, permitted firewood gathering, road maintenance activities and general use of open roads are evaluated and designed to minimize or avoid effects to riparian habitat in compliance with the NWFP Aquatic Conservation Strategy and because it important to numerous special status species. Indirect effects of taking no action to improve drainage problems such as undersized culverts may result in disruption of riparian habitat if culverts become clogged or overwhelmed during storm events and wash out or modify existing sand bars or pools that provide suitable turtle habitat.

Cumulative Effects

Forest-implemented projects in riparian habitat would include measures to protect and minimize impacts to riparian habitat and associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat. Indirect effects that result in disruption of riparian habitat or increased sediment delivery from taking no action under alternative 1 may be additive to cumulative effects to northwestern pond turtles in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**" of northwestern pond turtles.

Alternative 2

Direct and Indirect Effects

As with amphibians, turtles are known to pass through culverts as they move through riparian habitat corridors. However, culverts in the Sucker Creek Legacy Roads project area do not provide the typical habitat that northwestern pond turtle's use, except where there may be pools of water next to the culverts.

Any turtles, eggs or young present in or around culverts proposed for treatment, could be harmed or killed during activities such as culvert removal, replacement, and cleaning, and ditch cleaning for drainage improvement. Any turtles found in culverts during culvert work would be moved to suitable adjacent habitat to avoid harm. In addition, vegetation clearing for culvert work may remove or disturb riparian vegetation and possibly change the site microclimate by increasing exposure sunlight and reducing moisture. Turtles bask in sunlight so the change in microclimate may not be a negative impact. The estimated maximum amount of vegetation clearing for culvert work is 4 acres distributed throughout the project area. Not all of the culvert sites provide suitable habitat for these turtles. Using the forest riparian reserve GIS data for all streams and waterbodies as a proxy for riparian habitat, there are approximately 10,662 acres of riparian habitat within the forest boundary in the project area. Potential impacts on up to 4 acres of riparian habitat at culvert locations within the project area would affect less than 0.5% of the available riparian habitat in the project area.

Long-term potential beneficial effects of alternative 2 to western pond turtles is that proposed culvert replacements will ensure right-sized culverts that minimize potential for disruption of stream habitat conditions, high flow velocities through the culverts and will be designed to maintain stream habitat connectivity. Road decommissioning and storage would improve riparian habitat quality and availability by removing the effects of roads. Culvert removal associated with proposed road decommissioning would result in long-term restoration of natural stream habitat structure and riparian habitat quality.

Cumulative effects

Forest implemented projects in riparian habitat would include measures to protect the quality of the habitat and minimize impacts to associated species. Ongoing mining, recreation and existing levels of road use in the project area are expected to continue and may have negative impacts on riparian habitat and turtles. Potential direct impacts to western pond turtles from proposed culvert work alternative 2 may be additive to cumulative effects in the Sucker Creek watershed though not all the culvert locations or affected riparian habitat is suitable for these turtles.

Conclusion

Considering the direct, indirect and cumulative effects and long-term beneficial effects of alternative 2 to riparian habitat, implementation of Sucker Creek Legacy Roads alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**" of northwestern pond turtles.

Pacific Fisher

Status: Federal – Candidate; USDA FS Sensitive (Region 6); State of Oregon – Critical

The Pacific fisher was petitioned for federal listing by the Center for Biological Diversity and several other environmental organizations in November 2000. After a 12-month review, the U.S. Fish and Wildlife Service (USFWS) classified Pacific fishers in the Cascade Range and all areas west, to the coast in Oregon and Washington; and in California, the North Coast from Mendocino County north to Oregon, east across the Klamath Mountains, across the southern Cascade Range and south through the Sierra Nevada as the West Coast Distinct Population Segment. As a result the USFWS gave a "warranted but precluded" decision to the petition, designating the West Coast DPS a federal candidate species (USFWS 2004).

Currently, there are two documented populations in southern Oregon which appear to be genetically isolated from each other (Aubry et al. 2004). This is considered to be due to the presence of potentially strong ecological and anthropogenic barriers including the white oak savanna habitat of the Rogue Valley and Interstate 5. Based on DNA analyses, individuals in the southern Oregon Cascades appear to be descendants of animals re-introduced from British Columbia and Minnesota during the late 1970s and early 1980s by the Oregon Department of Fish and Wildlife (Drew et al. 2003). Animals in the eastern Siskiyou Mountains of Oregon are genetically related to individuals in the northwestern California population, which is indigenous (Wisely et al. 2004, Farber and Franklin 2005). For information on fisher habitat and life history needs see the wildlife report.

Surveys and Presence in the Project Area

No surveys have been conducted for fisher in the Sucker Creek Legacy Roads project area. There is one 1994 record of a fisher observation in the project area. There are known and historic sites near HWY 199 at the Oregon/California border, and one in the Headwaters Applegate River watershed east of the project area.

The Sucker Creek watershed (the project area) is used as the analysis area for Pacific fishers. Suitable habitat for fishers is present throughout the project area. Potential denning and resting habitat for this analysis was defined as predominantly conifer forest with greater than or equal to 60 percent canopy closure, and a diameter of greater than or equal to 20 inches d.b.h. The 2000 LEMMA GNN data estimate 10,323 acres of denning/resting habitat in the project area. Dispersal and foraging habitat is sapling/pole conifer forest (9-19.9 inches d.b.h.) with at least 60 percent canopy closure. The 2000 LEMMA GNN data estimate 25,711 acres of dispersal/foraging habitat mapped within the project area, though practically the entire project area may provide foraging opportunities given the general nature of their food habits.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Potential direct effects to Pacific fishers would include any disturbance or removal of trees and down wood that could potentially serve as denning or resting sites and direct injury or mortality of fishers from collision with vehicles. According to the GNN data, approximately 758 acres of potential denning/resting habitat and 2,385 acres of potential dispersal/foraging habitat are within 164 feet of roads proposed for treatment. This represents 7 percent and 9 percent of these habitats respectively within the project area. These habitats within 164 feet of currently open roads would continue to experience existing road influence and considered to be of lower quality than the same habitat located farther from the roads. Important habitat features for fishers such as trees with cavities, snags and down wood are often removed as public hazards or for firewood. The impacts of hazard tree removal, permitted firewood gathering, mining access, road maintenance activities and general use of open roads are evaluated and designed to minimize or avoid effects because these features are important to numerous special status species.

Furthermore, approximately 3,200 acres of potential denning/resting habitat and 8,709 acres of potential dispersal/foraging habitat are within 656 feet of roads proposed for treatment which is 31 percent and 34 percent of these habitats respectively in the analysis area. These habitats within 200m of open roads may be avoided by fishers, particularly roads that have heavier traffic.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue with design criteria where applicable to minimize impacts to habitat features important to fishers.

There are no direct or indirect effects from alternative 1 that would be additive to cumulative effects to Pacific fishers when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Alternative 2

Direct and Indirect Effects

Potential direct effects to Pacific fishers under alternative 2 would include disturbance or removal of trees and down wood that could potentially serve as denning or resting sites within the footprint of culvert work locations where vegetation in the road fill would be cleared. This would include down logs, trees with mistletoe or other platform structures, snags or trees with cavities. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. This would be a very small amount of the specific habitats available for fishers in the watershed which is considered lower in quality due proximity to open roads. Trees that are cut in at these locations would be left in the riparian reserve to provide sufficient coarse woody debris. Excess trees would be either placed in LSR habitat to provide sufficient coarse woody debris or if the location is in matrix, they may be offered to the public for firewood.

Proposed road decommissioning and storage would remove approximately 212 acres of denning/resting habitat and 746 acres of dispersal/foraging habitat from the influences of roads on habitat quality. This represents 28 percent and 31 percent reduction of the amounts of these habitats respectively, currently within 164 feet of open roads in the project area.

Additionally, this proposed road decommissioning and storage would remove approximately 722 acres of denning/resting habitat and 2,032 acres of dispersal/foraging habitat within 656 feet of roads from potential avoidance by fishers and prey species due to use of roads. This represents 23 percent reduction of both habitats currently within 656 feet of open roads in the project area.

Conversion of roads to trails would reduce road impacts on both habitat quality and avoidance, though some avoidance of habitat next to trails would be expected if they are frequently used.

Aside from the direct impacts of culvert work on roads proposed for stormproofing, there are no anticipated direct or indirect effects to fishers from road stormproofing.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue with design criteria that minimize impacts to fishers. Alternative 2 would be beneficial to fishers where roads are decommissioned or put into storage and thus reduce the effects of roads on habitat quality and avoidance.

There are no direct or indirect effects from alternative 2 that would be additive to cumulative effects to Pacific fishers when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads alternative 1 or 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**." for **Pacific fisher** because open roads generally reduce the quality and availability of adjacent habitat. Alternative 2 would result in beneficial impacts where roads are decommissioned or put into storage and therefore improve habitat quality and availability to fishers within the project area.

Pallid Bat, Townsend's Big-eared Bat, Fringed Myotis

Status: USDA FS Region 6 Sensitive

Pallid Bat

Pallid bats are known to occur throughout SW Oregon and NW California. Suitable roost habitat types include buildings, bridges, rock outcrops, and large decadent snags with loose bark. Pallid bats have been captured from several sites on the RRSNF, including some locations on the Siskiyou Mountains Ranger District. They have also been observed roosting under bridges on the Applegate River.

Pallid bats have not been documented in the Sucker Creek Legacy Roads project area, though the presence of bridges, abandoned buildings and large decadent snags in the project area provide potential roosting habitat for pallid bats.

Townsend's Big-Eared Bat

Townsend's big-eared bats occur in a wide variety of habitats, its distribution tends to be geomorphically determined and is strongly correlated with the availability of caves or cave-like roosting habitat (e.g., old mines) (Pierson et al. 1999). The species may also use hollow trees for roosting. Suitable roosts sites and hibernacula fall within a specific range of temperature and moisture conditions. Moths make up the majority of the diet for *C. townsendii*.

Currently, the Oregon Caves National Monument and abandoned buildings and mine adits within the project area provide potential roost or maternity sites for Townsend's big-eared bats. These bats are documented to occur within the Oregon Caves National Monument in the project area.

Fringed Myotis

Fringed Myotis (*M. thysanodes*) bats range through much of western North America from southern British Columbia, Canada, south to Chiapas, Mexico and from Santa Cruz Island in

California, east to the Black Hills of South Dakota. *M. thysanodes* occurs from sea-level to approximately 9,300 feet, but is most common at middle elevations approximately 6,500 feet. Distribution is patchy. It appears to be most common in drier woodlands (oak, pinyon-juniper, ponderosa pine) but is found in a wide variety of habitats including desert scrub, mesic coniferous forest, grassland, and sage-grass steppe.

M. thysanodes roost in crevices in buildings, underground mines, rocks, cliff faces, and bridges. Roosting in decadent trees and snags, particularly large ones, is common throughout its range in western U. S. and Canada. *M. thysanodes* roosts have been documented in a large variety of tree species and it is likely that structural characteristics (e.g. height, decay stage) rather than tree species play a greater role in selection of a snag or tree as a roost. Information available on hibernation is largely limited to an accounting of the types of structures used as hibernacula including: caves, mines and buildings.

Potential habitat exists in the project area although there are no known occurrences documented for this species. The nearest documented locations of these bats to the project area are to the east in the Thompson Creek and Applegate River Watersheds.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Potential direct effects to these bat species from routine road and recreation site maintenance would include disturbance or removal of large snags as roadside or recreation hazard trees. Removal snags for these purposes are limited annually under Forest Miscellaneous Projects Programmatic Section 7 Consultation for the northern spotted owl.

Cumulative Effects

There are no direct or indirect effects from alternative 1 that would be additive to cumulative effects to pallid bats, Townsend's big-eared bats or fringed myotis when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 would have **no impact** on pallid bats, Townsend's big-eared bats or fringed myotis

Alternative 2

Direct and Indirect Effects

Potential direct effects to these bats under alternative 2 would include disturbance or removal of trees with cavities or large snags that provide potential habitat within the footprint of culvert work locations where vegetation would be cleared, and roadside hazard trees that may be felled during road treatment activities. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. Because trees to be removed would be less than 80 years in age, it is not likely that it would include many large trees with cavities or snags and would represent a small amount of these habitat features available in the project area.

Proposed road decommissioning, roads converted to trails and roads put into storage would improve habitat conditions for these bats in the long-term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Section 7 Consultation for spotted owls. Hazard tree and vegetation removal under alternative 2 may be additive to cumulative effects to bats when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**." of pallid bats, Townsend's big-eared bats or fringed myotis due to potential removal of suitable snag habitat.

Lewis' Woodpecker and White-headed Woodpecker

Status: UDA FS Region 6 Sensitive

Lewis' Woodpecker

Lewis' woodpeckers are migratory in southwestern Oregon, with sporadically large populations in the winter and scattered breeding pairs in the summer reported. Gilligan et al. (1994) reports that they are common breeders in summer in Jackson and Josephine Counties but in the last 10 years they have not been documented (N. Barrett 2008, pers. com.) and there are few recent breeding records (Janes et al. 2002). The population of Lewis' woodpeckers has fallen dramatically across Oregon as pine–oak woodlands are lost (Gilligan et al. 1994). A contributing factor in the decline has been the spread of the European Starling, which aggressively out-competes this species for available cavities. Habitat loss is due to a wide variety of concerns that include urbanization of valley floors, fire suppression and encroachment of conifer forests, timber harvest of pine components in the oak forests, etc.

This species is closely tied to the ponderosa pine/oak savannah habitats of eastern and southwest Oregon. Nests are often in the large Ponderosa Pine snags or mature oaks while the birds forage on insects and acorn meat. In winter they store acorn meat in crevices in trees and power poles. Because this woodpecker does not usually excavate its own cavity, they have a close tie to older snags within the forest that are likely to contain cavities and have crevices for food storage.

Potential habitat does exist for this species in the lower elevations of the Sucker Creek Legacy Roads project area, though there are no known records of this species occurring in the project area.

White-headed woodpecker

White-headed woodpeckers have been confirmed breeding along the California border into Josephine County. There are 8 confirmed observations of this species in the Sucker Creek Legacy

Roads project area. These woodpeckers breed in pine and mixed conifer forests. This species is not migratory and can be found on the forest year round (Janes et al. 2002).

Thinned stands with large remnant trees provide suitable habitat, as well as old growth forests. Nest predation by small mammals has been found to be a common cause of nest failure for white-headed woodpeckers and they have been found to have better nesting success in pine stands with lower shrub cover (Mellen-McLean et al. 2013). On the Rogue River–Siskiyou National Forest any dry, open forest stands with large trees and snags may serve as suitable foraging and breeding habitat for the species.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Potential direct effects to these woodpecker species would include any disturbance or removal of large trees or snags and direct injury or mortality from collision with vehicles. Potential habitat within 164 feet of currently open roads would continue to experience existing road influence and considered to be of lower quality than the same habitat located farther from the roads. Edge effects and road-related disturbance may affect the availability of suitable habitat within 656 feet of open roads. Important habitat features for woodpeckers such as trees with cavities and snags may be removed where they are considered roadside or recreation site hazard trees.

Cumulative Effects

There are no direct or indirect effects from alternative 1 that would be additive to cumulative effects to Lewis' or white-headed woodpeckers when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Alternative 2

Direct and Indirect Effects

Potential direct effects to these woodpeckers under alternative 2 would include disturbance or removal of trees with cavities, snags or oak trees that provide potential habitat within the footprint of culvert work locations where vegetation in the road fill would be cleared and roadside hazard trees that may be felled during road treatment activities. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. Because trees to be removed would be less than 80 years in age, it is not likely that it would include many large pine or oak and would represent a small amount of these habitat features available in the project area.

Proposed road decommissioning, roads converted to trails and roads put into storage would improve habitat conditions for these woodpeckers in the long term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Consultation. Alternative 2 would have long-term benefits to these woodpeckers where roads are decommissioned or put into storage and thus reduce snag removal and road-related disturbance.

Hazard tree and vegetation removal under alternative 2 may be additive to cumulative effects to Lewis' and white-headed woodpeckers when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 1 or 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**." for Lewis' woodpeckers or white-headed woodpeckers due to potential removal of suitable snag habitat. Alternative 2 may result in more suitable habitat removal for proposed culvert work, but would have long-term beneficial impacts where roads are decommissioned or put into storage and improve habitat quality and availability for these woodpeckers within the project area.

Chace Sideband Snail

Status: USDA Forest Service – Sensitive, Survey and Manage

This species is endemic to northern California and southwest Oregon. In California, this species has been reported mainly from the Klamath Basin in northern Siskiyou County, from the vicinity of Happy Camp east to the Shasta and Little Shasta River Drainages, in the Goosenest Ranger District of the Klamath National Forest, with a few locations reported as far south and west as Trinity County, on the eastern slopes of the Trinity Mountains in the Weaverville Ranger District of Shasta-Trinity National Forest. In Oregon, sites occur in southern and eastern Jackson and Douglas Counties, in the Klamath-Siskiyou Mountains and the west slopes of the Cascades, north to the Umpqua River basin. One site has been reported from the Klamath River Basin in southwestern Klamath County, Oregon.

Forested areas along roadsides and culvert locations with rocky habitat, herbaceous vegetation, deciduous leaf litter and coarse woody debris, provide potential habitat for this species. It is assumed that any snails present along roadsides or around culverts would not be there if not for the suitability of the forested habitat around these locations. Road prism and culvert locations proposed for treatment have been disturbed within the last 80 years and are not considered to be contributing significantly to habitat that provides a reasonable assurance of persistence for this species. For these reasons, surveys for this species were not conducted for this project. There are no records of this species occurring in the Sucker Creek Legacy Roads project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in routine maintenance and continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Ongoing mining and recreation use would continue. Routine maintenance of culverts and ditches, mining and recreation activities may result in harm or mortality of Chace sideband snails if they are present where these occur, but this is expected to be uncommon. Because this species is not restricted to aquatic or riparian habitats, there are no anticipated indirect effects of taking no action that would impact this species.

Cumulative Effects

There are no direct or indirect effects from taking no action under alternative 1 that would be additive to cumulative effects to Chace sideband snails in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 would have **no impact** to the Chace sideband snail.

Alternative 2

Direct and Indirect Effects

Proposed ditch cleaning and culvert improvements under alternative 2 would disturb potential habitat for this species. Vegetation and woody debris removal, within the culvert work footprint may cause direct harm or mortality to any Chace sideband snails that may be present. Vegetation removal may change the microclimate at the culvert work locations. Vegetation that is cut for drainage improvement would be left within riparian reserve or late successional reserve as required for large woody material. Any snails present at these locations are more likely associated with surrounding habitat that would remain undisturbed. Proposed road decommissioning and storage treatments would improve habitat for this species in the long term where natural habitat conditions would be restored and road-related disturbance would be reduced. Proposed road and culvert treatments under alternative 2 are not expected to have a significant negative effect on the species habitat or persistence of this species if they are present at or near any proposed work locations.

Cumulative Effects

The potential for direct harm to this species at proposed work locations may be cumulative to ongoing potential caused by routine road maintenance, ongoing mining and recreations activities. This species has not been found in the project area and is not expected to be commonly affected by any of these activities.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 **“May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species.”** of the Chace sideband snail due to low potential for direct mortality or harm from culvert and ditch treatments and a small amount of potential habitat disturbance or removal at culvert work locations.

Oregon Shoulderband

Status: USDA Forest Service Region 6 – Sensitive, Survey and Manage

This terrestrial snail is endemic to northern California and southwest Oregon. In California, this species has been reported in Siskiyou County, in the Klamath River Basin from the vicinity of Happy Camp east to the Shasta and Little Shasta River Drainages in the Klamath National Forest. The range extends south into Trinity County, with the westernmost edge of the range on the eastern slopes of the Trinity Mountains in the Weaverville Ranger District of Trinity National Forest. Additional sites occur to the east in Shasta County, within the Shasta National Forest. In

Oregon, the range includes Jackson, Josephine, and Douglas Counties, with verified locations in Roseburg and Medford BLM Districts and the Umpqua National Forest.

Surveys and Field Reconnaissance

Forested areas along roadsides and culvert locations with rocky habitat, herbaceous vegetation, deciduous trees and leaf litter and coarse woody debris, provide potential habitat for this species. However, the distribution of these snails is not restricted to roadsides or culvert locations. The project area contains suitable rocky, talus areas in stream drainages with hardwood and herbaceous components that also provide potential habitat. Road prism and culvert locations proposed for treatment have been disturbed within the last 80 years. For these reasons, surveys for this species were not conducted for this project. There are no records of this species occurring in the Sucker Creek Legacy Roads project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in routine maintenance and continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Ongoing mining and recreation use would continue. Routine maintenance of culverts and ditches, mining and recreation activities may result in harm or mortality of Oregon shoulderband snails if they are present where these occur, but this is expected to be uncommon. Because this species is not restricted to aquatic or riparian habitats, there are no anticipated indirect effects of taking no action that would impact this species.

Cumulative Effects

There are no direct or indirect effects from taking no action under alternative 1 that would be additive to cumulative effects to Oregon shoulderband snails in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 would have **no impact** to the Oregon shoulderband snail.

Alternative 2

Direct and Indirect Effects

Proposed ditch cleaning and culvert improvements under alternative 2 would disturb potential habitat for this species. Vegetation and woody debris removal, within the culvert work footprint may cause direct harm or mortality to any Oregon shoulderband snails that may be present. Vegetation removal may change the microclimate at the culvert work locations. Vegetation that is cut for drainage improvement would be left within riparian reserve or late successional reserve as required for large woody material. Any snails present at these locations are more likely associated with surrounding habitat that would remain undisturbed. Proposed road decommissioning and storage treatments would improve habitat for this species in the long term where natural habitat conditions would be restored and road-related disturbance would be reduced. Therefore, proposed road and culvert treatments under alternative 2 are not expected to have a significant negative effect on the species habitat or persistence of this species if they are present at or near any proposed work locations.

Cumulative Effects

The potential for direct harm to this species at proposed culvert and roadside work locations may be cumulative to ongoing potential caused by routine road maintenance, ongoing mining and recreation activities. This species has not been found in the project area and is not expected to be commonly affected by any of these activities.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species."** of the Oregon shoulderband snail due to potential for direct mortality or harm from culvert and ditch treatments and a small amount of potential habitat disturbance or removal at culvert work locations.

Franklin's Bumblebee and Western Bumblebee

Status: USDA Forest Service Region 6 – Sensitive

Franklin's Bumblebee

Franklin's bumblebee is known from Douglas, Jackson, and Josephine counties in Oregon and Siskiyou and Trinity counties in California. Elevations of localities where it has been found range from 540 feet in the north to above 7,800 feet in the south of its historic range.

There is a historic location near Bigelow Lakes in the Sucker Creek Legacy Roads project area (Thorp, pers. com.). The project area includes many areas of potential habitat for these bees.

Western Bumblebee

The western bumblebee (*Bombus occidentalis*) was widespread and common throughout the western United States and western Canada before 1998 (Xerces Society 2009). Unfortunately, since 1998 populations of this bumblebee have declined drastically throughout parts of its former range. Populations of the western bumblebee in central California, Oregon, Washington and southern British Columbia have mostly disappeared. It is difficult to accurately assess the magnitude of these declines since most of this bee's historic range has not been sampled systematically.

There are no known occurrences of this bee in the Sucker Creek Legacy Roads project area though potential habitat is present throughout the project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in routine maintenance and continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Ongoing mining and recreation use would continue. Because bees are very mobile and able to quickly perceive and avoid harm, direct mortality or harm from impact with vehicles on open roads is the most likely negative impact of existing road use. Because this species is not restricted to aquatic or riparian habitats, there are no anticipated indirect effects of taking no action that would impact these bee species.

Cumulative Effects

There are no direct or indirect effects from taking no action under alternative 1 that would be additive to cumulative effects to the Franklin's or western bumblebee in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project Alternative 1 would have **no impact** to the Franklin's or western bumblebee.

Alternative 2

Direct and Indirect Effects

Proposed ditch cleaning and culvert improvements under alternative 2 would disturb potential nectar and pollen producing plants for these species. Vegetation removal from culvert work footprints or roadsides may harass any foraging bees present at these locations. The potential for either of these two species to be present at any proposed work sites is low and they would be expected to move away from the site to avoid harm. Proposed culvert improvements may remove up to 4 acres of vegetation distributed in small areas (about 20 feet by 20 feet) which is less than 0.5% of the entire project area. These sites would be re-vegetated within a year of treatments. Proposed road decommissioning and storage treatments would improve habitat for this species in the long term where natural habitat conditions would be restored and road-related disturbance would be reduced. Proposed road and culvert treatments under alternative 2 are not expected to have appreciable direct or indirect effects on these bee species.

Cumulative Effects

There are no anticipated direct or indirect effects from alternative 2 that would appreciably contribute to cumulative effects of past, present or foreseeable activities in the project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 **"May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species."** of the Franklin's bumblebee or western bumblebee due to low potential for harassment of individuals and short-term removal of a small amount of forage habitat from culvert and roadside treatments.

Johnson's Hairstreak

Status: USDA Forest Service – Sensitive

This small brown butterfly occurs in isolated pockets in the western mountains of California up into British Columbia. On the Rogue River-Siskiyou, range maps indicate a population in the coastal mountains of Coos, Curry and Josephine counties. A second population is in northern Jackson County around Crater Lake National Park.

Some surveys have been carried out for this species on the Rogue River-Siskiyou National Forest in the Southern Cascade Mountains and some individuals have been detected. One detection is located along the 4611079 road proposed for stormproofing. A few additional locations are adjacent to the project area in the south and one location to the east of the project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in routine maintenance and continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Ongoing road maintenance including hazard tree removal and mining and recreation use would continue. These butterflies spend most of their time in mature forest canopy, but may infrequently collide with vehicles using open roads. There are no appreciable direct or indirect effects of taking no action that would impact Johnson's hairstreak butterflies.

Cumulative Effects

There are no direct or indirect effects from implementation of alternative 1 that would be additive to cumulative effects to Johnson's hairstreak butterflies in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 would have **no impact** on the Johnson's hairstreak.

Alternative 2

Direct and Indirect Effects

Vegetation removal associated with proposed culvert improvements under alternative 2 may remove fir trees with mistletoe that provide potential habitat for this species. Any eggs or larvae present in mistletoe in this vegetation may be harmed. A maximum of 4 acres of vegetation removal is estimated which represents less than 0.5 percent of the project area and would be distributed in small areas (about 20 feet by 20 feet) throughout the project area. True fir with mistletoe is common throughout the project area. Proposed road decommissioning and storage treatments would improve habitat for this species in the long term where natural habitat conditions would be restored and road-related disturbance such as hazard tree removal would be reduced. Proposed road and culvert treatments under alternative 2 are not expected to have appreciable direct or indirect effects to Johnson's hairstreak butterflies.

Cumulative Effects

There are no anticipated direct or indirect effects from alternative 2 that would appreciably contribute to cumulative effects of past, present or foreseeable activities to this species in the project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 "**May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species**." for the Johnson's hairstreak because of potential disturbance to individuals and limited removal of mistletoe habitat from culvert treatments. With the large amount of true fir in the project area, it is likely that mistletoe will remain widely available for this species.

Gray Blue Butterfly and Mardon Skipper

Status: USDA Forest Service Region 6 – Sensitive

Gray Blue Butterfly

This butterfly is found in the southern Cascade Mountains and eastern Siskiyou Mountains in Douglas, Jackson, and Klamath counties, including Mount Ashland, Diamond Lake, and Crater Lake. Adults can be abundant where they occur but populations are locally distributed (Warren 2005). This species was very common and reliable just east of the Grouse Gap Shelter on the south side of Mount Ashland in the 1990s and early 2000s (Runquist 2009, *pers. comm.*), but additional localities in the Siskiyou Mountains and northern Klamath Mountains are not known (Runquist 2009, *pers. comm.*, Pyle 2009, *pers. comm.*).

In 2013 this butterfly was identified by BLM biologist Jason Riley and Forest Service biologist Bonnie Allison in the meadows around Bigelow Lakes in the project area. Additional suitable habitat for this species is expected to occur in the wet meadows at higher elevations in the project area.

Mardon Skipper

Mardon skippers use a variety of early successional meadow habitats which appear to vary by region (Kerwin and Huff 2007). Populations in southern Oregon occupy small (less than 0.5 to 10 acres), high-elevation (4,500 to 5,100 feet) grassy meadows within mixed conifer forests (USFWS 2010).

Seven or eight locations are known from the Cascade Mountains in southwest Oregon, most bordering the Cascade-Siskiyou National Monument, with populations ranging from a few to approximately 200 individuals (Kerwin and Huff 2007). In 2005, searches and surveys of populations on BLM and Forest Service lands in southern Oregon discovered several new sites. There are now a total of 23 known sites in southern Oregon. One site is on the RRSNF and is approximately 5 miles north of the nearest site on BLM lands. Another locality is a complex of sites on both BLM and Forest Service lands north of Dead Indian Memorial Road. Several more sites were located adjacent to known sites on BLM lands. One day counts at sites ranged from one butterfly to over 70 butterflies (Kerwin and Huff 2007).

Though potential habitat is available in the Sucker Creek Legacy Roads project area, there are no known occurrences of mardon skipper in the project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued routine maintenance and use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Ongoing mining and recreation use would continue. Both species of these butterflies tend to remain close to their natal sites, though male mardon skippers have been found to use road corridors with nectar sources. Roads and trails also provide mud puddles where butterflies are known to congregate for moisture and minerals. It’s possible that adults of either species may infrequently collide with vehicles or be crushed by vehicles using open roads. There are no appreciable direct or indirect effects of taking no action that would impact gray blue or mardon skipper butterflies.

Cumulative Effects

There are no anticipated direct or indirect effects from implementation of alternative 1 that would be additive to cumulative effects to gray blue or mardon skipper butterflies in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of Sucker Creek Legacy Roads Project alternative 1 would have **no impact** on the gray blue butterfly or mardon skipper.

Alternative 2

Direct and Indirect Effects

Vegetation removal associated with proposed culvert improvements under alternative 2 may remove plants that provide potential habitat, particularly nectar sources for these species. These locations are not likely to be used by these species for breeding since they are small disturbed areas that typically lack appropriate host plants. Any butterflies present at culvert work sites would be expected to fly and avoid harm unless adults puddling on roadways get run over. A maximum of 4 acres of vegetation removal is estimated which represents less than 0.5% of the project area and would be distributed in small areas (about 20 feet by 20 feet) throughout the project area. These sites would be re-vegetated within a year. Suitable meadow habitat with appropriate host plants for these species in the project area would not be affected by proposed road and culvert treatments. Proposed road decommissioning and storage treatments would improve habitat for these species in the long term where natural habitat conditions would be restored and road-related disturbance and traffic reduced. Direct and indirect effects of alternative 2 are not expected to appreciably impact gray blue or mardon skipper butterflies.

Cumulative Effects

Anticipated direct or indirect effects from alternative 2 would not appreciably contribute to cumulative effects of past, present or foreseeable activities to gray blue or mardon skipper butterflies in the project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 2 "**May Impact Individuals and or Habitat but not likely to cause a trend to federal listing or a loss of viability to the population or species.**" for the gray blue butterfly or mardon skipper because of low potential for mortality of individuals and limited removal of nectar sources from culvert treatments.

Effects on Management Indicator Species

Management indicator species (MIS) associated with the Siskiyou NF LRMP (USDA Forest Service 1989) represent the issues, concerns, and opportunities to support recovery of federally listed species, provide continued viability of sensitive species, and enhance management of wildlife and fish for commercial, recreational, scientific, subsistence, or aesthetic values or uses. Management indicators representing overall objectives for wildlife, fish, and plants may include species, groups of species with similar habitat relationships, or habitats that are of high concern (FSM 2621.1). The current condition of habitat and trends for all MIS species is discussed in the Rogue River-Siskiyou National Forest MIS Forestwide Analysis (USDA Forest Service 2012).

An indicator species represents all other wildlife species which utilize a similar habitat type. Indicator species act as a barometer for the health of various habitats and will be monitored to quantify habitat changes predicted by implementation of the Forest Plan (1989 pages IV-10 and 11, FEIS page III-102). MIS and habitats include bald eagle (habitat along major rivers), osprey (habitat along large rivers), spotted owl (late-successional forest), pileated woodpecker and American marten (mature/interior forest), black-tailed deer and Roosevelt elk (early successional forest stages, and woodpeckers/cavity nesters (wildlife trees [snags]). Table 22 identifies Management Indicator Species and their habitat represented within the project areas. Northern spotted owls were discussed previously.

Table 22. Wildlife management indicator species and habitat in the analysis area

Species	Habitat Represented	Habitat Present in Analysis Area	Species Present in Analysis Area
Bald Eagle	Habitat corridors along major rivers	Yes	Documented
Osprey	Habitat corridors along large creeks and rivers	Yes	Documented
Spotted owl	Old-growth forest	Yes	Documented
Pileated woodpecker	Mature forest	Yes	Documented
American marten	Mature forest	Yes	Documented
Woodpeckers	Snags (standing dead trees)	Yes	Documented
Black-tailed deer, Roosevelt elk	Early successional forest stages	Yes	Deer Documented, Elk not likely

Northern Bald Eagle

Bald eagle habitat on the Rogue River-Siskiyou N.F. is protected and managed in accordance with the Pacific Bald Eagle Recovery Plan (USFWS 1986), and Standards and Guidelines 4-3 and 4-4 of the Siskiyou National Forest Land and Resource Management Plan (USDA 1989). As part of the recovery plan, key nesting habitat areas have been identified on the Rogue River-Siskiyou N.F. along the Rogue, Illinois, and Sixes Rivers (USFWS 1986). In 2011, an estimated 39,536 acres of prime bald eagle habitat (within 1 mile of the Rogue and portions of the Illinois and Chetco rivers) is available on the Siskiyou National Forest. The Sucker Creek Legacy Roads Project is not within this prime habitat.

There is one sighting of a bald eagle in the Forest NRIS database at Bolan Lake in the southern boundary of the project area. There are no known bald eagle nests or roosts within the project area; the project is beyond the distance where the most suitable nesting structure occurs along the Rogue and Illinois Rivers outside of the project area.

Direct, Indirect and Cumulative Effects

Proposed road stormproofing, decommissioning, road storage activities, or conversion of roads to trails would not modify or remove potential nesting, roosting or foraging habitat for bald eagles.

Conclusion

The Sucker Creek Legacy Roads project would have **no impact** on the bald eagle and may benefit habitat for eagles where road treatments are needed to improve riparian habitat for anadromous fisheries. Furthermore, because the project will have no impact to the bald eagle, it will not contribute toward a negative trend in viability on the Siskiyou portion of the Rogue River National Forest for the bald eagles as management indicator species.

Osprey

Osprey (*Pandion haliaetus*) are commonly observed along the Rogue River, and in the Chetco Illinois, and Coquille fifth-field watersheds. This species is closely associated with open water (lakes, rivers, and streams). It breeds in the major habitat types but only when adjoining open water. Ospreys arrive during early spring (March), nest, and then leave for wintering grounds by October. Their primary diet includes fish and eels, which they hunt while in flight. Osprey monitoring from 1992 to 2001 on the lower Rogue River detected an increase in active osprey nests. Osprey nests have also recently been monitored on the South Fork Coquille and Elk Rivers.

In 2011, approximately 39,563 acres of prime habitat for osprey were identified within 1 mile of the Rogue River and sections of the Illinois and Chetco Rivers. The Sucker Creek Legacy Roads project is not within this prime habitat. However, ospreys have been observed flying over Sucker Creek in the project area. The lower, wider part of Sucker Creek and the lakes in the project area provide potential foraging habitat for osprey.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Potential direct effects to osprey would include any disturbance or removal of large trees or snags considered as roadside or developed recreation site hazards situated next to wide streams or lakes that may be used by osprey as perches. This is expected to be a small percentage of suitable perch trees available in the project area. There are no known osprey nests in the project area.

Cumulative Effects

There are no appreciable direct or indirect effects from alternative 1 that would be additive to cumulative effects to osprey habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Alternative 2

Direct and Indirect Effects

Potential direct effects to osprey under alternative 2 would include disturbance or removal of snags within the footprint of culvert work locations where vegetation would be cleared and roadside hazard trees that may be felled during road treatment activities that are situated next wide streams. This is anticipated to be a very unlikely impact. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. Because trees to be removed would be less than 80 years in age, it is not likely that it would include many large snags next to open water that would be used by osprey and therefore would represent a small amount of these habitat features available in the project area.

Proposed road decommissioning, roads converted to trails and roads put into storage may improve habitat potential for osprey in the long-term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Consultation. Hazard tree and vegetation removal under alternative 2 would have a minor contribution to cumulative effects to osprey habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of alternative 1 or 2 for the Sucker Creek Legacy Roads Project would not impact prime habitat available on the Forest for osprey, and continued viability of osprey on the Siskiyou portion of the Rogue River-Siskiyou National Forest would be expected.

Pileated Woodpecker

Pileated woodpecker (*Dryocopus pileatus*) is generally associated (feeds and breeds) with the mixed forest habitat type, and present in the oak habitat type. This species feeds and breeds in a variety of structural conditions especially in a landscape mosaic of habitat types. Decadent wood and snags are essential habitat components and are available throughout the Sucker Creek Legacy Roads project area.

Pileated woodpecker habitat has decreased from 41% of the Forest in 1989 to 34 percent (368,428 acres) in 2011. The total amount of habitat protected has increased from 179,737 acres with the 1989 Siskiyou NF LRMP to 315,231 acres in 2011 with the added NWFP direction. Currently 86% of pileated woodpecker habitat is in protected land allocations on the Siskiyou side of the Forest. Recovery Action 32 for the northern spotted owl retains high quality nesting, roosting and foraging habitat in the remaining land allocations. Eighty-three percent of the Forest is in an unmanaged condition and providing snags at natural levels. The amount of available habitat for this species on the Forest is above 1989 Forest Plan projections and is consistent with Forest Plan direction, thus continued viability of the pileated woodpecker is expected on the Siskiyou National Forest (USDA Forest Service 2012).

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest Travel Management process or other smaller projects. Potential direct effects to pileated woodpeckers would include any disturbance or removal of large snags considered as roadside or developed recreation site hazards situated in late successional habitat. This is expected to be a minor impact to late successional habitat available in the project area.

Cumulative Effects

There are no appreciable direct or indirect effects from alternative 1 that would be additive to cumulative effects to pileated woodpecker habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

In 2011, approximately 368,428 acres of late-successional habitat which provides foraging and nesting habitat is distributed across the Siskiyou National Forest. Implementation of Sucker Creek Legacy Roads Project alternative 1 would not result in detectable impacts to available habitat for pileated woodpeckers at the forest scale, and continued viability of pileated woodpeckers on the Siskiyou portion of the Rogue River-Siskiyou National Forest would be expected.

Alternative 2

Direct and Indirect Effects

Potential direct effects to pileated woodpecker habitat under alternative 2 would include disturbance or removal of snags within the footprint of culvert work locations where vegetation would be cleared and roadside hazard trees that may be felled during road treatment activities that are situated within late successional habitat. This is anticipated to be a minor impact due to the effect roads have on habitat quality. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. Because trees to be removed would be less than 80 years in age, it is not likely that clearing would include many large snags that contribute to late successional habitat structure.

Proposed road decommissioning, roads converted to trails and roads put into storage may improve habitat potential for pileated woodpeckers in the long-term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Section 7 Consultation. Hazard tree and vegetation removal at culverts under alternative 2 would have a minor contribution to cumulative effects to pileated woodpecker habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

In 2011, approximately 368,428 acres of late-successional habitat which provides foraging and nesting habitat is distributed across the Siskiyou National Forest. Up to 4 acres of vegetation removal at culvert locations under alternative 2 for the Sucker Creek Legacy Roads Project would not result in detectable impacts to available habitat for pileated woodpeckers at the forest scale, and continued viability of pileated woodpeckers on the Siskiyou portion of the Rogue River-Siskiyou National Forest would be expected.

American Marten

American marten (*Martes americana*) are strongly associated with mature conifer forest (Zielinski et al, 2001). They may den in snags, down logs, and rock outcrops. The Pacific Southwest Research Station (PSW) conducted a smoke-plate track survey in 1997 (following Zielinski and Kucera 1995) for marten and fisher across the Gold Beach and Chetco Ranger Districts. Marten were detected in the Lower Rogue, Hunter Creek, Pistol River and Chetco watersheds. Fisher was detected in the North Fork Smith watershed. Spotted skunk, gray fox, ringtail, and northern flying squirrel were also detected. Remote camera sets were installed at four locations along Agness Road in 1993 (1 station) and 1996 (3 stations). Spotted skunk, gray fox and turkey vultures were captured on film, no martens.

There have been two marten detections within the Sucker Creek Legacy Roads project area. One near Pepper Camp and one in the Red Buttes Wilderness.

Marten habitat at the Siskiyou National Forest scale is estimated to be between 34-36 percent The American marten model (USDA Forest Service 2011a) estimates that 36 percent of the Siskiyou National Forest currently provides suitable habitat. Marten habitat has decreased from 41 percent of the Forest in 1989 to 34 percent in 2011. The total amount of habitat protected has increased from 179,737 acres with the 1989 SNFP to 315,231 acres in 2011with the SNFP/NWFP direction. Currently 86 percent of marten habitat is in protected land allocations. Spotted Owl Recovery Action 32 retains high quality nesting, roosting and foraging habitat in the remaining land allocations. Eighty-three percent of the Forest is in an unmanaged condition and providing snags and down wood at natural levels. The amount of available habitat for this species on the Forest is above 1989 Forest Plan projections and is consistent with Forest Plan direction, thus continued viability of the American marten is expected on the Siskiyou National Forest.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest travel management process or other smaller projects. Potential direct effects to American marten would include any disturbance or removal of large snags considered as roadside or developed recreation site hazards situated in late successional habitat. This is expected to be a minor impact to late successional habitat available in the project area.

Cumulative Effects

There are no appreciable direct or indirect effects from alternative 1 that would be additive to cumulative effects to American marten habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

In 2011, approximately 368,428 acres of late-successional habitat which provides foraging and nesting habitat is distributed across the Siskiyou National Forest. Implementation of Sucker Creek Legacy Roads Project alternative 1 would not result in detectable impacts to available habitat for American marten at the forest scale, and continued viability would be expected for this species on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

Alternative 2

Direct and Indirect Effects

Potential direct effects to American marten habitat under alternative 2 would include disturbance or removal of snags or large down wood within the footprint of culvert work locations where vegetation would be cleared and roadside hazard trees that may be felled during road treatment activities that are situated within late successional habitat. This is anticipated to be a minor impact due to the effect roads have on habitat quality. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area. Because trees to be removed would be less than 80 years in age, it is not likely that clearing would include many large trees or snags that contribute to late successional habitat structure. Adequate large down wood to meet habitat requirements would be retained near culvert locations in riparian reserves, late successional habitat or critical habitat for spotted owls.

Proposed road decommissioning, roads converted to trails and roads put into storage may improve habitat potential for American marten in the long-term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest-implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. These projects implement measures to minimize impacts to late successional habitat. Hazard tree and vegetation removal at culverts under alternative 2 would have a minor contribution to cumulative effects to American marten habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads Project area.

Conclusion

In 2011, approximately 368,428 acres of late-successional habitat which provides foraging and nesting habitat is distributed across the Siskiyou National Forest. Up to 4 acres of vegetation removal at culvert locations under alternative 2 for the Sucker Creek Legacy Roads Project would not result in detectable impacts to available habitat for American marten at the forest scale, and continued viability of American marten would be expected on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

The Woodpecker Group (acorn, pileated, downy, hairy, and white-headed woodpeckers, northern flickers and red-breasted sapsuckers)

The woodpecker group includes acorn, pileated, downy, hairy, and white-headed woodpeckers, as well as northern flickers and red-breasted sapsuckers. These species are generally associated with oak woodland, mixed forest, and/or grassland habitat types. Woodpeckers excavate nests in snags and trees. They also forage in decayed wood.

Currently there is far more habitat available on the Forest for woodpeckers than was planned for in the original LRMP. It is very likely that the forest is providing habitat for far more woodpecker pairs than originally thought to be needed across the Forest to provide for long-term viability for this species (USDA Forest Service 2012). In addition to the reserve land allocations on the Forest, the Forest has specific snag and down wood requirements using local long-term eco-plot data that the Forest believes contributes to maintaining woodpecker viability across all land allocations better than the original snag habitat capability requirement under the LRMP (USDA Forest Service 2001). The Biscuit Fire burned through 467,702 acres within the Siskiyou National Forest and provides areas with high amounts of snags.

The Forest NRIS wildlife database documents 50 observations of the five different species of woodpeckers and multiple undocumented observations of most of these species are known throughout the Sucker Creek Legacy Roads project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest travel management process or other smaller projects. Potential direct effects to this group of woodpeckers would include any disturbance or removal of conifer or hardwood snags considered as roadside or developed recreation site hazards particularly in oak woodland habitat. This is expected to be a minor impact to the total amount of these habitat elements available in the project area.

Cumulative Effects

There are no appreciable direct or indirect effects from alternative 1 that would be additive to cumulative effects to habitat for this woodpecker group when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

The Biscuit Fire burned through 467,702 acres within the Siskiyou National Forest and provides diverse forested areas with high amounts of conifer and hardwood snags. Implementation of Sucker Creek Legacy Roads Project alternative 1 would not result in detectable impacts to available habitat for this woodpecker group at the forest scale, and continued viability would be expected for these species on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

Alternative 2

Direct and Indirect Effects

Potential direct effects to habitat for this group of woodpeckers under alternative 2 would include disturbance or removal of conifer or hardwoods snags within the footprint of culvert work locations where vegetation would be cleared and roadside hazard trees that may be felled during road treatment activities particularly within oak woodland habitat. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area and a small amount of it would be within oak woodland habitat.

Proposed road decommissioning, roads converted to trails and roads put into storage may improve habitat potential for this woodpecker group in the long term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest-implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. Hazard tree and vegetation removal at culverts under alternative 2 would have a minor contribution to cumulative effects to available woodpecker habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

The Biscuit Fire burned through 467,702 acres within the Siskiyou National Forest and provides a diversity of forested areas with high amounts of conifer and hardwood snags. Up to 4 acres of vegetation removal at culvert locations under alternative 2 for the Sucker Creek Legacy Roads Project would not result in detectable impacts to available snag habitat for this woodpecker group at the forest scale, and continued viability of these woodpeckers would be expected on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

Blacktail Deer and Roosevelt Elk

Blacktail deer (*Odocoileus hemionus columbianus*) and Roosevelt elk (*Cervus elaphus roosevelti)* use all successional stages to meet their habitat needs for cover, forage and reproduction. Natural or created openings provide the majority of foraging habitat, which is assumed to be the most restrictive habitat component in this region (Forest Plan FEIS, III-106-107). Deer and elk represent more than 180 wildlife species that need early successional stages to meet some or all of their requirements (Brown 1985). Forage habitat is available within existing meadows, harvest units less than 10 years old and open canopy forested areas.

The amount of area with programmed timber harvest, expected to provide a sustainable forage base, on the Forest has declined from 505,000 acres (46%) to 78,713 acres (7%). The amount of forage available from timber harvest activities has declined from 48,785 acres in 1989 to 9,132 in 2011. The amount of forage available from fires has increased from 103,646 in 1989 to 471,176 in 2011. Forage created from regeneration harvest and fires are transitory, which generally has a benefit for deer and elk for 5-10 years until canopy closure resumes. The amount and quality of forage provided by the Biscuit Fire is beginning to decline as tree canopies begin to close.

Current elk and deer populations are below Oregon Department of Fish and Wildlife management objectives. Populations are stable within the Biscuit Fire perimeter. Outside the Biscuit Fire, populations are showing a downward trend due to loss of early seral habitat and other factors including disease, parasites and predation (personal communication with Curtis Edwards, Wildlife Biologist, Oregon Department of Fish & Wildlife, January 2010 as cited in the ROR-SIS NF Briggs Valley Vegetation Management Project BE, February 2012).

Forested conditions provide hiding (vegetation capable of hiding 90 percent of a standing adult deer or elk at 200 feet or less), thermal cover (a forest stand greater than 40 feet tall with greater than 70 percent canopy cover) and optimal cover (a forest stand with overstory, sub-canopy, shrub, and herbaceous strata and greater than 70 percent canopy). The 2000 LEMMA GNN vegetation mapping indicates approximately 23,314 acres of thermal cover on National Forest System lands within the Sucker Creek Legacy Roads project area.

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest travel management process or other smaller projects. Existing mining and recreation access including hunting would continue. Roosevelt elk are unlikely to occur in the project area, however blacktail deer are common. Potential direct effects include mortality related to vehicle collisions and hunting. Deer are often seen traveling and foraging along roadsides, but habitat within 656 feet of roads is generally not considered quality hiding cover or secure habitat for these species.

Cumulative Effects

There are no appreciable direct or indirect effects from alternative 1 that would be additive to cumulative effects to habitat for deer and elk when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of the Sucker Creek Legacy Roads Project alternative 1 would not result in detectable impacts to available habitat for blacktail deer or Roosevelt elk at the forest scale, and continued viability would be expected for these species on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

Alternative 2

Direct and Indirect Effects

Foraging habitat is experiencing the most decline of the required habitats for these species across the Forest as forested areas that have been harvested or burned in the last 20 years are maturing. Implementation of alternative 2 would have no anticipated negative direct or indirect impacts because vegetation cleared within the footprint of culvert work locations would provide small areas of early seral vegetation within a growing season following the work. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area.

Proposed road decommissioning, roads converted to trails and roads put into storage are expected to benefit habitat for blacktail deer and Roosevelt elk by improving habitat quality and reducing road-related disturbance.

Cumulative Effects

There are no direct or indirect effects of alternative 2 that would contribute to cumulative effects to available deer and elk habitat when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of alternative 2 for the Sucker Creek Legacy Roads Project would not result in negative impacts to habitat for black tailed deer or Roosevelt elk at the Forest scale, and continued viability of these species would be expected on the Siskiyou portion of the Rogue River-Siskiyou National Forest.

Effects for Neo-tropical Migratory Birds and Landbirds

Within the National Forest System, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales. The Rogue River-Siskiyou NF is within Bird Conservation Region 5 (Northern Pacific Forest).

This analysis is based on neo-tropical migratory birds/landbird focal species identified by Partners in Flight (PIF): Conservation Strategy for Landbirds in Coniferous Forest of Western Oregon and Washington (2012). As per the Partners In Flight Bird Conservation Plan "… if you provide all of the habitats to some degree over some landscape, then you will probably be taking care of most if not all of the landbirds in that habitat. The conservation emphasis is on ecosystems, habitats, and habitat conditions, not species." Priority bird species for varying habitats within the Sucker Creek watershed are summarized in table 23.

Bird conservation objectives are tied to focal species that represent habitat attributes and/or ecological functions of various forest age classes. For example, Vaux's Swifts use large snags in old-growth systems, olive-sided flycatchers use residual canopy trees in early seral stages, and hermit warblers use the closed canopy in young to mature-aged forests. These habitats and their attributes, in certain quantities and combinations, should be maintained on landscapes in a shifting mosaic of conditions. The Sucker Creek watershed provides potential nesting, dispersal, foraging, and cover habitat for variety of bird species.

Table 23. Habitat condition and attributes associated with Birds of Conservation Concern (2008) and Partners in Flight focal migrant species

Habitat	Condition	Habitat Attribute	Bird Species
Coniferous forest	Old-growth / Mature	Large snags	Vaux's swift, pileated woodpecker
Coniferous forest	Old-growth / Mature	Large trees; conifer cones; mid-story tree layers	Brown creeper; red crossbill; varied thrush
Coniferous forest	Mature / Young	Varied canopy closure; deciduous canopy & understory; complex forest floor	Hermit warbler, Hammond's flycatcher; Pacific-slope flycatcher; Wilson's warbler; winter wren, Northern goshawk, purple finch
Coniferous forest	Young / Pole	Deciduous canopy	Black-throated gray warbler
Coniferous forest	Pole	Deciduous subcanopy / understory	Hutton's vireo
Coniferous forest	Early-seral	Residual canopy trees, snags, deciduous vegetation; nectar-producing plants	Olive-sided flycatcher; western bluebird; orange-crowned warbler; rufous hummingbird
Coniferous forest	Unique	Mineral springs	Band-tailed pigeon
Oak woodlands (including non-forested prairie)	Unique		California quail, western screech-owl, Nutall's woodpecker, oak titmouse, wrentit, California thrasher, black-chinned sparrow, Oregon vesper sparrow, horned lark
Cliffs, waterfalls & forest	Unique	Cliffs near waterfalls within forested habitat.	Black swift
Riparian	Riparian	Large trees adjacent to major rivers. Dense shrub habitat.	Bald eagle, willow flycatcher
Large cliffs	Unique		Peregrine falcon

Alternative 1

Direct and Indirect Effects

Implementation of alternative 1 would result in continued use of all roads currently open unless otherwise closed by the Forest travel management process or other smaller projects. Road maintenance and use for mining and recreation access and administrative use would continue. Direct and indirect impacts to migratory birds from road use are mortality or harm from collision with vehicles and reduced habitat quality from road influence.

Cumulative Effects

Road-related impacts to migratory birds are inherent to most activities in the watershed. Taking no action under alternative 1 would not be additive to cumulative effects to migratory birds when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Alternative 2

Direct and Indirect Effects

Effects to neo-tropical migratory birds/landbirds under alternative 2 are variable depending on the habitat associations of the individual species.

Vegetation cleared within the footprint of culvert work locations would provide small areas of early seral vegetation within a growing season following project implementation. As estimated earlier, if all of the culvert locations were cleared of vegetation to improve drainage using a 20-foot by 20-foot footprint, a total of 4 acres of vegetation would be cleared in the entire project area.

Proposed activities that remove vegetation would have the potential to disturb nesting birds that use edge habitats for nesting. However, the seasonal restriction on vegetation cutting activities to reduce disturbance to nesting spotted owls would also benefit any nesting birds where these activities may take place. Any active bird nests found during proposed activities would be avoided for up to 100m where possible, until fledglings have left the nest. No impacts are expected to bald eagles or peregrine falcons, or old-growth/mature obligate species such as brown creeper, red crossbill and varied thrush because these species would not likely use this edge habitat.

The diversity of riparian shrubs, forbs and hardwoods in culvert locations may provide suitable foraging habitat for many species. Hermit warblers, Hammond’s flycatcher; Pacific-slope flycatcher, Wilson’s warbler, winter wren, Northern goshawk and purple finch are most closely tied to deciduous canopy and complex forest floor/understory habitat of which a small amount would be disturbed or removed by this project.

The majority of the vegetation removal would be seedling/sapling/pole conifer or riparian hardwood such as alder. Impacts to species such as Olive-sided flycatcher; western bluebird; orange-crowned warbler; Rufous hummingbird that use this type of habitat would be minimal considering the limited area affected at any one location when compared to the amount of habitat available in the watershed.

Proposed road decommissioning, roads converted to trails and roads put into storage are expected to benefit migratory bird habitat by restoring natural habitat conditions and reducing road-related disturbance.

Cumulative Effects

With measures to avoid harming any active bird nests and the small amount (4 acres) of edge habitat that would be disturbed or cleared for culvert work, the contribution of direct and indirect effects alternative 2 would be minor to cumulative effects to migratory birds in the Sucker Creek Legacy Roads project area.

Conclusion

Implementation of alternative 1 would have no measurable effects to migratory birds considering the past and existing use of roads for various activities in the Sucker Creek watershed. The effects from implementation of alternative 2 would mostly affect species associated with early forest successional stages and edge habitat, with no more than minimal (**M**) impacts for any species considering the small amount of vegetation that would be affected at the watershed scale. Seasonal disturbance restrictions for spotted owls under alternative 2 would also benefit nesting neo-tropical birds in the area and proposed road decommissioning and storage would benefit birds by restoring natural habitat and reducing road-related disturbance.

Migratory Bird Treaty Compliance: Alternative 1 would have no measureable impacts to migratory birds. Alternative 2 would include seasonal restrictions on activities to protect nesting spotted owls which would also benefit nesting birds. Any active bird nests would be avoided to the extent practicable. Vegetation removal or disturbance under alternative 2 is expected to have minimal impacts to species that use edge habitats and proposed decomissioning would benefit migratory birds. Therefore, implementation of alternative 2 would meet compliance with the Migratory Bird Treaty Act because measures would be taken to minimize short-term impacts and enhance habitat for these birds in the long term.

Of the two alternatives evaluated for impacts to wildlife, alternative 2 best meets Forest Plan Standards and Guidelines for wildlife and management allocations while meeting the purpose and need of restoring watershed health and habitat quality by reducing risk of National Forest System road-caused sediment delivery to streams in the 5th field Sucker Creek watershed while retaining roads needed for management, special uses, recreation, and fire suppression and other emergency needs.

Effects to Northwest Forest Plan Species

Survey and Manage Compliance

The Sucker Creek Legacy Roads project lies within the range of certain Survey and Manage species listed in the 2001 NWFP Record of Decision displayed in table 24.

Table 24. Survey and manage species ranging within the Sucker Creek Legacy Roads project area

Species	S&M Category	Survey Triggers			Survey Results		
		Within Species Range?	Contains Suitable Habitat?	Habitat Disturbing?	Surveys Required	Survey Date (MM/YYYY)	Sites Known or Found
Vertebrates							
Great Gray Owl	C	Yes	Yes	No	No	N/A	No
Oregon Red Tree Vole	C	Yes (Xeric Zone)	Yes	No	No	N/A	No
Del Norte Salamander	D	Yes	Yes	Yes	No	N/A	Yes (Known)
Invertebrates							
Chase sideband	B4	Yes	Yes	Yes	No	N/A	No
Oregon shoulderband	B4	Yes	Yes	Yes	No	N/A	No

Del Norte Salamander *(Plethodon elongatus)*

Reference: http://www.californiaherps.com/salamanders/pages/p.elongatus.html

Found along the coast in far northwest California from near Orick, Humboldt County, east to near the Seiad Valley, Siskiyou County and Salyer, Trinity County, and north into southwestern Oregon where they have been found inland along West Cow Creek in Douglas County.

These are Survey and Manage Category D species. They do not require pre-disturbance surveys to meet objectives for species persistence because inadvertent loss of some undiscovered sites would not change their level of rarity (USDA Forest Service, USDI Bureau of Land Management 2001: Standards and Guidelines 11).

The Forest NRIS Wildlife database documents 146 Del Norte salamander observations mostly detected in surveys conducted between 1990 and 2000. These locations are primarily in late successional mixed-conifer forested stands and none coincide with any of the proposed culvert removal locations.

Alternative 1

Direct, Indirect and Cumulative Effects

There are no anticipated direct, indirect or cumulative effects to Del Norte salamanders from taking no action under alternative 1.

Alternative 2

Direct and Indirect Effects

It is possible that these salamanders may be present in culvert locations which provide cool, moist refugia during summer in dry ephemeral draws. Direct impacts include potential harm or mortality of individuals during proposed culvert removal activities. Any salamanders found during culvert work would either be left unharmed or moved to suitable moist, shaded habitat adjacent to but undisturbed by the work site if there is potential for harm. Vegetation clearing at culvert sites may change the microclimate by increasing temperature and decreasing humidity to be unsuitable for these species, though any surrounding suitable habitat would not be changed. Proposed road decommissioning would be beneficial in the long-term where natural habitat conditions are restored and road-related disturbance would be reduced.

Cumulative Effects

Ongoing road maintenance, firewood gathering and mining activities would have the most potential for direct or indirect disturbance of this species. The contribution of direct and indirect effects of alternative 2 to cumulative effects to Del Norte salamanders would be minor.

Conclusion

Implementation of Sucker Creek Legacy Roads Project Alternative 2 may unintentionally harm individual Del Norte Salamanders that may be present at culvert replacement sites. Measures would be taken to move any observed salamanders from the work site to suitable habitat. Other road treatments and vegetation clearance for culverts are not expected to change the suitability of any known Del Norte salamander sites because they beyond 100 feet of any known site. This Project is expected to maintain existing Del Norte salamander sites and sufficient habitat for these salamanders within the entire project area.

Oregon Red Tree Vole (*Arborimus longicaudus*)

Surveys efforts for red tree voles conducted within the Sucker Creek Legacy Roads project for several years between 1990 and 2011 have identified 118 red tree vole observations. These surveys included the climbing and investigation of trees with suitable habitat characteristics.

Red tree vole surveys specific to proposed road and culvert treatment activities under alternative 2 of the Sucker Creek Legacy Roads project were not triggered as habitat-disturbing activity. The 2001 ROD Standards and Guidelines specifically state: “Routine maintenance of improvements and existing structures is not considered a habitat-disturbing activity. Examples of routine maintenance include pulling ditches, clearing encroaching vegetation, managing existing seed orchards, and falling hazard trees” (USDA Forest Service, USDI Bureau of Land Management 2001: Standards and Guidelines 11: S&G 22). Any trees to be removed from culvert locations have grown on the site since the culvert was installed. These trees are on roadside edges and would not likely be the largest trees in a stand occupied by red tree voles. The areas that would be cleared of vegetation at culvert locations are not considered to be “suitable habitat that may potentially contribute to a reasonable assurance of persistence” for red tree voles and therefore do not require pre-disturbance surveys (USDA Forest Service, USDI Bureau of Land Management 2001: S&G 23, Huff et al., 2012)

Direct and Indirect Effects

Proposed road treatments and culvert work under alternative 2 are not expected to directly or indirectly affect red tree voles because any trees to be removed as hazards or encroachment in the fill at culvert locations do not likely have the structure that red tree voles use for nesting or contribute to habitat that provides a reasonable assurance of persistence of red tree voles sites in the Sucker Creek Legacy Roads project area. Proposed road decommissioning is expected to be beneficial to late successional habitat in the long-term where natural habitat conditions would be restored and road-related disturbance removed.

Cumulative Effects

There are no direct or indirect effects of Sucker Creek Legacy Roads Project alternative 1 or 2 that would contribute to cumulative effects to red tree voles.

Conclusion

Implementation of Sucker Creek Legacy Roads Project is not expected to change the suitability of any known red tree vole sites in the project area and is expected to maintain sufficient habitat for this species within the entire project area.

Great Gray Owl

The NRIS Wildlife database contains only one incidental sighting of a great gray owl within the Siskiyou portion of the Rogue River-Siskiyou National Forest, at Eden Valley on the Powers Ranger District. There are no records of great gray owls in the Sucker Creek Legacy Roads project area; however there are areas of open meadow habitat greater than 10 acres within the project area. Proposed road and culvert treatment activities would occur within the road prism and culvert locations that have been previously disturbed. The proposed project would not have any significant negative impact on potential habitat in the project area for great gray owls, therefore, surveys are not triggered.

Direct, Indirect and Cumulative Effects

For reasons explained above, implementation of Sucker Creek Legacy Roads Project alternative 1 or 2 would not result in direct or indirect effects to great gray owls, or contribute to cumulative effects to this species.

Conclusion

Implementation of Sucker Creek Legacy Roads Project is expected to maintain the suitability of potential great gray owl habitat the project area.

Chace Sideband and Oregon Shoulderband

These terrestrial snails have been previously described and evaluated for projects effects in this document as USFS Region 6 Sensitive Species. There are no known locations of these species in the Sucker Creek Legacy Roads project area.

Survey and Manage Compliance Statement: The Sucker Creek Legacy Roads Project is consistent with the Siskiyou National Forest Land and Resource Management Plan as amended by the 2001 Record of Decision, and Standards and Guidelines, for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2001 ROD). The Project applies the survey and manage species list in the 2001 Record of Decision and thus meets the provisions of the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, and survey requirements described in the most recent survey protocols for each species.

Bat Roosts

Fringed, long-eared, and long-legged myotis; silver-haired, pallid, and Townsend's big-eared bats

Five of these species – fringed myotis (*Myotis thysanodes)*, long-eared myotis (*M. evotis*) , long-legged myotis (*M. volans*), silver-haired bat (*Lasionycteris noctivagans*), and pallid bats (*Antrozous pallidus*) – rely on standing snags and large mature trees with crevices for roosting habitat. There is strong association with ridges and roosting sites. Four species (fringed myotis, long-eared myotis, long-legged myotis and Townsend's big-eared bats) use mines and caves for breeding, roosting and winter hibernacula. Another important habitat component for all bat species is the availability of open water for drinking which is abundant in the streams and lakes present in the project area. The Forest NRIS Wildlife database documents three observations of each long-eared myotis and silver-haired bats and one observations of Townsend's big-eared bat.

Direct and Indirect Effects

Potential direct effects to these bats under alternative 2 would include disturbance or removal of trees with cavities or large snags that provide potential roost habitat within the footprint of culvert work locations where vegetation would be cleared, and roadside hazard trees that may be felled during road treatment activities. A maximum estimate of 4 acres of vegetation clearance distributed among hundreds of culvert locations is not expected to remove a considerable number of large trees with cavities or snags when compared to the amount of these features available in the entire project area. Furthermore, proposed road decommissioning, roads converted to trails and roads put into storage would improve habitat conditions for these bats in the long-term where road-related disturbance and hazard tree removal would be reduced.

Cumulative Effects

Ongoing Forest implemented and permitted road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Section 7 Consultation for spotted owls. Potential large snag removal under alternative 2 may be additive to cumulative effects to bat roosts when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

This project would not impact existing caves, bridges, mines or abandoned buildings suitable for these bat species. Implementation of Sucker Creek Legacy Roads Project alternative 2 may remove individual suitable large snags from the road prism or culvert locations throughout the project area however, either alternative for this project is expected to maintain sufficient roost habitat for bats within the entire project area.

Cavity Nesting Birds

Flammulated Owl and White-headed Woodpecker

The flammulated owl (*Otus flammeolus)* and white-headed woodpecker (*Picoides albolarvatus)* are closely associated with the mixed-forest habitat type but require a ponderosa pine component. These species are associated with multi-story, moderate-closed canopy closure structural conditions. Trees with cavities are an important habitat element for these species. The Sucker

Creek Legacy Roads Project area provides suitable habitat for these species. The Forest NRIS Wildlife database contains 1 flammulated owl observation and 7 white-headed woodpecker observations at the throughout the mid and higher elevations of the project area.

Direct and Indirect Effects

Proposed road and culvert treatments may remove some trees with cavities. The estimated maximum area of vegetation removal for culvert work in the project area is 4 acres. It is not expected that there would be a substantial number of trees with cavities removed from these sites when compared to the habitat available for these species in the Sucker Creek Legacy Roads project area.

Cumulative Effects

Ongoing road maintenance, mining access, recreation and existing levels of road use in the project area are expected to continue. The Forest limits the number of hazard trees removed along roads and within recreation sites annually under the Miscellaneous Projects Programmatic Section 7 Consultation for spotted owls. Hazard tree and vegetation removal under alternative 2 may be additive to cumulative effects to cavity nesting birds when combined with past, present or foreseeable activities in the Sucker Creek Legacy Roads project area.

Conclusion

Although implementation of Sucker Creek Legacy Roads Project alternative 2 may remove individual suitable trees with cavities from the road prism or culvert locations throughout the project area, either alternative for this project is expected to maintain sufficient habitat for cavity nesting birds within the entire project area.

Aquatic Biota

Introduction

This section describes the current condition of fish species and habitat within the affected watershed and the effects of project activities (identified in chapter 2) on those resources. Non-fish aquatic resources are discussed as well. Information and analyses are based on the fish eries report and the aquatic biota biological evaluation. Mitigation measures and project design criteria to minimize or prevent effects to fish and non-fish species are listed in chapter 2.

A pilot inventory, covering the Sucker Creek watershed, was conducted in 1995 and resulted in the Grayback/Sucker Key Watershed Analysis. The pilot analysis was supplemented with the Grayback-Sucker Watershed Analysis in 1998. In 2011 the area was analyzed using the Watershed Condition Framework process (USDA Forest Service 2010). This analysis found that the Grayback Creek, Middle Sucker Creek, and Lower Sucker Creek watersheds are in Watershed Condition Class II, functioning at risk (FSM 2521.1). This rating is due largely to road density, fine sediment in stream channels, high summer water temperature, simplification of in-stream channel habitat, and lack of off-channel habitat. The Upper Sucker Creek watershed was found to be in Condition Class I, functioning properly. In response to these ratings a Watershed Restoration Action Plan (WRAP) for the Sucker Creek watershed was completed in 2011 and identified both Grayback Creek and Middle Sucker Creek as priority subwatersheds. The Sucker Creek watershed is also considered a Tier 1 Key Watershed under the Northwest Forest Plan (USDA, USDI 1994).

Proposed activities for the Sucker Creek Legacy Roads and Trails Project are identified in chapter 2, alternative 2-modified proposed action. Watershed analyses for the affected watersheds were used to help develop the proposed activities. None of the proposed activities are inconsistent with the findings and recommendations of the Watershed Analyses.

Affected Environment

Endangered Species Act (ESA) Action Area

The action area, as defined by the ESA, is all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action [50 CFR § 402.02]. The action area not only includes the immediate footprint of the road-related activities, but any downstream reaches which may be affected indirectly.

The action area for this project is defined as the Sucker Creek 5th field watershed. The action area is defined this way because it is possible sediment changes resulting from this project could be observed in the mainstem of Sucker Creek. Sucker Creek is a Northwest Forest Plan Key Watershed and one of the highest priority restoration watersheds on the Rogue River-Siskiyou National Forest. In addition, Sucker Creek is designated Essential Salmonid Habitat by the Oregon Division of State Lands, and a Core Salmonid Area by Oregon Department of Fish and Wildlife. Further, the Sucker Creek watershed is a stronghold for threatened Southern Oregon Northern California Coast (SONCC) Coho Salmon and contains high intrinsic potential Coho habitat. The “Overview of ESA listed species and ESA and MSA (Magnuson-Stevens Fishery Conservation Act) Habitat” is available for review in the project files.

ESA listed species and MSA species & habitat - watershed scale

The Illinois River 4th field subbasin is one of the most important subbasins of the Rogue River for naturally produced Coho Salmon with perhaps half the wild Rogue Coho Salmon population residing here. This subbasin also has large populations of fall Chinook and winter Steelhead Trout in addition to resident Cutthroat and Rainbow Trout and other species. The Illinois River subbasin was identified as a focal basin and salmon stronghold by the non-profit Wild Salmon Center. The upper Illinois River tributaries, including Sucker Creek, produce about 33 percent of the wild Coho Salmon in the entire Rogue basin. Sucker Creek watershed is a high value spawning and rearing tributary for all anadromous fish species in the Illinois River subbasin. There is no hatchery supplementation in the Illinois River subbasin as it is managed exclusively for wild fish.

Four anadromous fish species occur in the Sucker Creek 5th field watershed (Coho Salmon, Chinook Salmon, winter Steelhead Trout and Pacific Lamprey); two native resident salmonids (Coastal Cutthroat Trout and Rainbow Trout); and Reticulate Sculpin as well as Klamath Small-scale Suckers. Redside Shiners and other fishes have been introduced. Steelhead trout in the Sucker Creek watershed contribute to a valuable recreational fishery in the Illinois and Rogue Rivers. Within the Sucker Creek watershed, the Lower Sucker Creek subwatershed has the most miles of occupied anadromous fish habitat and Upper Sucker Creek subwatershed the least. Fish species and miles of presence are depicted in table 25. Fish distribution for Sucker Creek watershed is shown in figure 14.

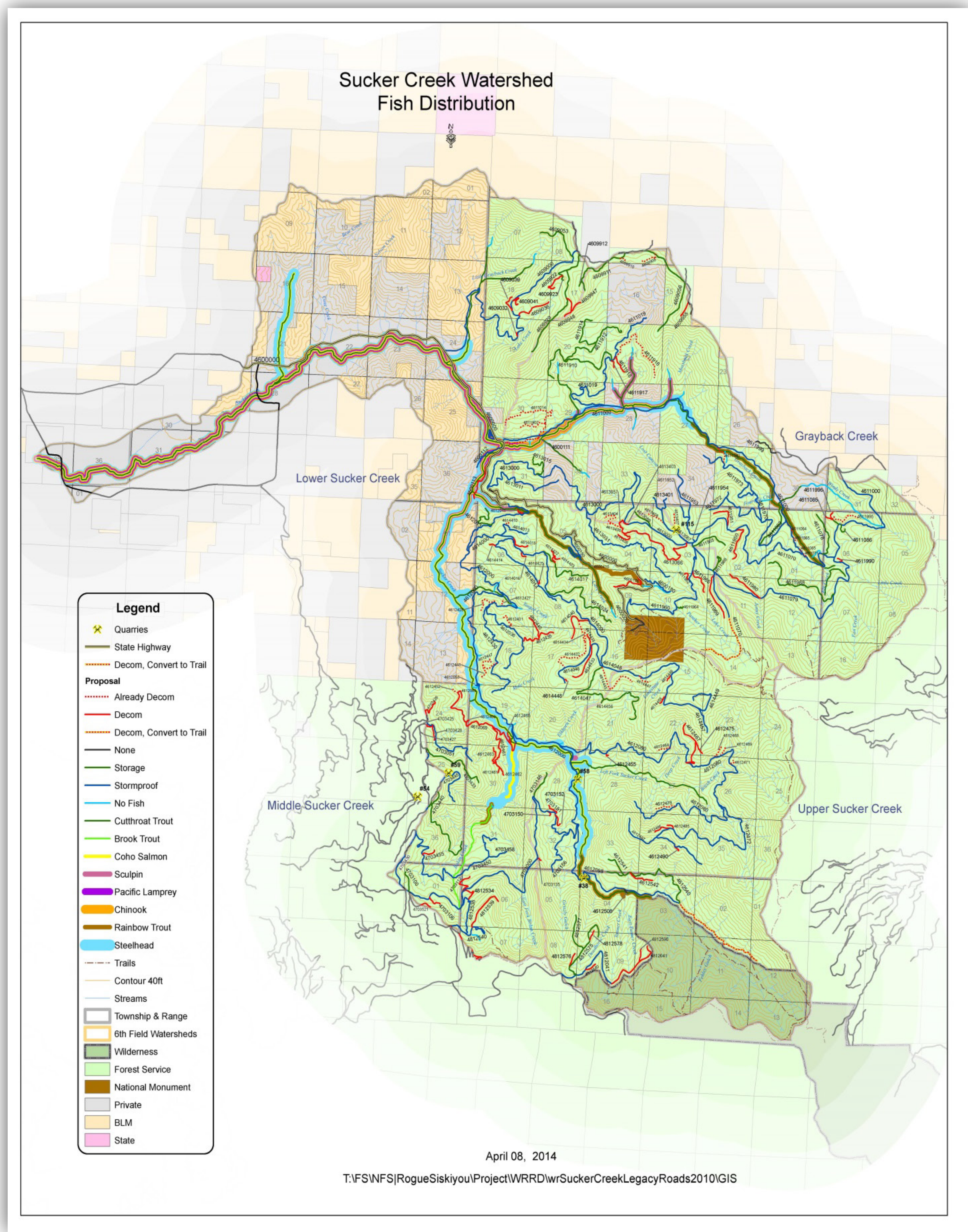

Figure 14. Fish distribution in the Sucker Creek watershed

Table 25. Fish species and presence within Sucker Creek 5th field watershed

Anadromous				Resident
6th Field Subwatershed *Priority Subwatershed	Coho Salmon (miles)	Chinook Salmon (miles)	Winter Steelhead (miles)	Resident Trout (cutthroat & rainbow) (miles)
Upper Sucker Creek	2.2	0	2.2	8.7
*Middle Sucker Creek	9.1	0.4	9.7	20.1
*Grayback Creek	3.4	1.5	4.1	17.0
Lower Sucker Creek	13.4	11.2	13.5	15.8
Total – 5th Field	28.1	13.1	29.5	61.6

Grayback Creek subwatershed has one of the highest density spawning streams (Grayback Creek) in southwest Oregon. While over 70 percent of the low-gradient high and very high potential Coho Salmon habitat is found on private lands in Lower Sucker Creek subwatershed, Grayback Creek and Middle Sucker Creek subwatersheds support moderate populations of Coho Salmon. Grayback Creek is the largest fish-bearing tributary in the Sucker Creek watershed central to the range of migrating salmon and an important Coho Salmon and Steelhead stream containing cool summer water flows. The lower 3 miles of this stream serves as an anchor point for salmon recovery and repopulation of adjacent habitats. This stream reach is important refugia during extreme climate conditions, particularly warming periods, and supports core populations of salmon.

The Middle Sucker Creek subwatershed has some of the highest potential for salmon production in the Illinois River sub-basin and serves as a biological node for recovery and repopulation of Coho Salmon in adjacent habitats. Coho Salmon use the full suite of habitats available and any improvement in fish habitat directed at Coho will benefit Chinook, Steelhead and Lamprey. The habitat in this subwatershed complements salmon habitat use in the downstream wide valley stream segments on private lands. Egg incubation and first summer juvenile rearing occurs here and over-wintering and early spring habitat for juvenile salmon occurs in the downstream segment on private lands.

The Lower Sucker Creek subwatershed, despite human pressures, remains a primary salmon-producing area in southwest Oregon; fall Chinook Salmon, Coho Salmon, winter Steelhead and Pacific Lamprey all spawn and rear here. Annually, hundreds of salmon and steelhead spawn from Grayback Creek downstream to the confluence with the East Fork Illinois River, a distance of about 12 miles.

Special status for fishes in the watershed is stated below:

- Endangered Species Act: Southern Oregon Northern California Coasts (SONCC) Coho Salmon and its critical habitat are listed as federally-threatened
- Magnuson-Stevens Fishery Conservation Act: Coho and Chinook Salmon Essential Fish Habitat
- R6 Sensitive Species List: Southern Oregon Northern California Coastal (SONCC) Chinook Salmon

The most important anadromous fish-bearing streams in the 6th field subwatersheds are:

- Upper Sucker Creek: Sucker Creek and Left Fork Sucker Creek

- Middle Sucker Creek: Sucker Creek and lower Cave Creek
- Grayback Creek: Grayback Creek
- Lower Sucker Creek: Sucker Creek and Bear Creek

Invasive species are not currently a major threat to native fishes in the Sucker Creek watershed. Exotic brook trout are present within Tannen and Bolan lakes and in the outflows only. Exotic Umpqua pike minnow and red side shiner have not become established in Sucker Creek on Forest Service lands, although they are expanding their range in lower Sucker Creek. Climate change and subsequent warming of surface waters during summer months may cause upstream migration of these exotic species and increased competition with trout and salmon. Other invasive aquatic and riparian species such as New Zealand mudsnails, Japanese knotweed and purple loosestrife have not currently invaded Sucker Creek (USDA Forest Service 2007).

Other Aquatic Biota

The other three anadromous fish species that occur in the Sucker Creek 5th field watershed (Chinook Salmon, winter Steelhead Trout and Pacific Lamprey); two native resident salmonids (Coastal Cutthroat Trout and Rainbow Trout); and Reticulate Sculpin as well as Klamath Small-scale Sucker are subjected to the same conditions as Coho within the watershed. The magnitude of effect to each of these species is variable, yet similar to those disclosed within this document for Coho Salmon.

Other aquatic biota potentially found on or downstream of the Rogue River-Siskiyou National Forest, were not addressed in this biological evaluation because they do not occur in the action area based on Forest Service surveys and professional knowledge.

Aquatic Habitat

The Sucker Creek watershed is located near the geographic center of the Klamath Mountains geologic province. The watershed is unusual for its limited amount of serpentine geology (compared to other Illinois River watersheds), and the presence of marble caves.

The stream channels along the mainstem of Sucker Creek and lower reaches of Grayback and Caves Creeks are “C” channel types (sinuous, low gradient channels; Rosgen 1994). Tributary streams and upper reaches of mainstem creeks are mainly “B” (low sinuosity, moderate gradient) and “A” (low sinuosity, high gradient) channel types per the Rosgen classification system. Sediment and large wood, which have a synchronous relationship in creating fish habitat, can move quickly during storms to the “C” depositional stream reaches in mainstem Sucker Creek and lower Grayback Creek, which are important to salmon. Generally there is a surplus of sediment and a dearth of large wood that limits the creation of complexes that could form pools and sort substrate particles for a diversity of stream bed habitats. The lower Sucker Creek subwatershed is a wide alluvial valley that is primarily in agricultural use. Public and private lands managed for timber production also occur in the northern portions of the subwatershed in several drainages.

The location of the proposed, endangered, threatened, or sensitive (PETS) aquatic biota essential fish habitat (EFH), and critical habitat (CH) within the project area was determined using current Forest Service GIS and field data. In general, aquatic habitats in the action area have been modified and simplified, water quality and riparian vegetation within this watershed are reflective of past stream cleanout, past hydraulic and placer mining activities, logging and roads in the riparian area. The stream channel in some of the areas within the watershed has been straightened and realigned, causing the channel to be wide, shallow, of steeper gradient and simplified compared to the natural potential which has reduced viable habitat for Coho Salmon. In some locations, mine tailing piles confine the channel and channel instability has caused excessive erosion and steep cutbanks.

There are no water quality limited streams within the Sucker Creek watershed (Oregon DEQ 2014). Though there is substantial evidence of past and current sediment loading in associated streams and the sediment influx is an existing and persistent concern (USDA Forest Service 2014). The most direct impact found within the watershed for aquatic species is the input of sediment in Grayback Creek. This sediment input is a plausible explanation for low smolt output in 2006. In late December 2005, a landslide and associated culvert failures sent a debris torrent down the White Rock Creek drainage. This debris torrent resulted in deposition of several thousand cubic yards of coarse sand and other sediments in lower Grayback Creek, scouring Coho Salmon redds and filling in side channels and off-channel habitat used for juvenile Coho rearing. The relatively high number of Coho parr in summer 2005, low number of Coho smolts in 2006, and observed redd scouring (Reid unpublished monitoring report) suggests the winter high flows and associated debris torrent significantly impacted at least one, if not two, year classes of Coho Salmon. Surprisingly, the December 2005 flows that triggered the landslides and associated debris torrent were far below flood stage at the sub-basin level and barely exceeded average bankfull levels.

For more specific descriptions of aquatic habitat quality and quantity of streams in the action area refer to the aquatic biota biological evaluation, the hydrology section in this EA and the hydrology report in the project record, the Sucker Creek Aquatic Restoration Plan (USDA Forest Service 2011), the Sucker Creek watershed Analyses (USDA Forest Service 1998), and stream inventories of pertinent streams (available from the Rogue River-Siskiyou National Forest).

Environmental Consequences

This analysis evaluates the potential direct, indirect and cumulative effects of the proposed action on species and habitat for: SONCC Coho, CH, EFH and R6 sensitive species. Critical habitat and essential fish habitat are the same in the action area, so any potential effect to one (i.e., CH) would obviously result in an effect to the other (i.e., EFH). This analysis will discuss affects to CH for feasibility and readability, recognizing that the same effect would apply to EFH.

Effects of alternatives on primary constituent elements (PCEs)

The activities for the modified proposed action under the Sucker Legacy Roads and Trails Project were split into four project elements: (1) stormproofing, (2) road storage, (3) road decommissioning, and (4) road to non-motorized trail conversion. Table 26 displays proximity of project activities in relation to critical habitat.

Table 26. Proximity of project elements to critical habitat within Sucker Creek 5th field watershed

Project Elements (PE)	Distance to Critical Habitat
Stormproofing	0.01 - 3.5 miles
Road Storing	0.01 - 3.5 miles
Road Decommissioning	0.01 - 3.0 miles
Road to Non-Motorized Trail Conversion	3.0 - 4.0 miles

The following PCE habitat and watershed condition indicators have been reviewed for possible effects:

Habitat Indicators (includes all indicators): Water quality (temperature, chemical contaminants/nutrients, sediment & pool character & quality), large wood, off-channel habitat, width/depth ratio by channel type, streambank condition, floodplain connectivity, and changes in peak and base flows

Watershed Condition Indicators (includes all indicators): Road density/location, human disturbance history, riparian reserves, and landslide and erosion rates

The small trees that would be removed within the riparian area are not providing stream shading for the river systems, nor are the trees a size in which they would act as large wood. If any large trees need to be removed at the sites they would be placed directly into the stream channel above bankfull flow levels as large wood where they would interact with the stream and help create habitat.

Alternative 1 – No Action

Direct Effects

Under alternative 1 – no action, the existing environmental condition would remain the same and would not change any of the above habitat indicators or watershed conditions.

Indirect Effects

Road Decommissioning/Storage/Stormproofing

Indirect effects could occur to sediment and pool character and quality because general road maintenance as funding allows and environmental conditions warrant would continue. All other PCEs would remain the same.

Sediment and Pool Character and Quality Effects

No road decommissioning or storage treatments would occur; however, stormproofing could still be done on level 2 and 3 roads. Level 2 roads are considered a low priority and the likelihood of road maintenance occurring on these roads is very low. Therefore, this analysis assumed that stormproofing would only occur on level 3 roads. The existing roads would be managed in their current state, and would continue to affect hillslope hydrology, act as connected disturbed areas, and degrade water quality because of the high potential sediment yield especially within the Middle Sucker Creek, Upper Sucker Creek, and Grayback Creek watersheds. The extent of this impact on individual species and their habitat is not quantifiable because it is only a potential effect that may occur in the future. The effects of road maintenance on SONCC Coho Salmon is covered in the Western Oregon Programmatic Biological Opinion (WOPBO)(NMFS 2011).

Proximity: All of the roads described in this project are upstream of CH by at least 0.01 mile to greater than 3 miles (table 26).

Probability: The hydrology report noted the locations of the current road structures (culverts). The probability of failure at a specific structure is unknown, but could occur. The amount of fine sediment material that could be contributed to the stream channel is also in the hydrology report.

Magnitude: The hydrology report discloses the amount of sediment for potential delivery. In some portions of the watershed, road-related sediment has been implicated as the major limiting factor to fish production. Road sediment has been described as the primary aquatic habitat degradation factor within the Grayback subwatershed. This sediment could affect several miles of aquatic habitat depending on how much of the sediment does get delivered and transported downstream.

Alternative 2 – Modified Proposed Action

Road to Non-motorized Trail Conversion

This proposed activity will not be analyzed any further for direct or indirect effects because this action is over 3 miles upstream of CH and will have no effect on any of the habitat indicators or watershed conditions, nor will it affect any other aquatic biota.

Direct Effects

Stormproofing, Road Storage, and Road Decommissioning

Sediment and pool character and quality effects

A direct causal mechanism to sensitive and threatened fish species or their habitat under this alternative is present where heavy equipment would be used in or near the stream channel. The unavoidable short-term adverse effects resulting from these activities include disturbance of riparian vegetation, exposure of bare soil, increased stream turbidity, increased fine sediments in stream substrates, and increased risk of chemical contamination from fuel and lubricants. The construction activities at these sites are likely to last two weeks at a maximum. During the time that heavy equipment is operating, juvenile salmonids may experience decreased feeding, increased stress, or be unable to use the stream immediately adjacent to the respective project site, depending on the severity of the turbidity increase. Also when the first fall rain comes the fish may experience sediment entering the stream. Although this represents a major behavioral change, the temporal and spatial scale of the impact is too small to cause measurable effects at the population level.

Proximity: All of the roads described for this project are upstream of CH and it is only the portions of this project that are within 1,000 feet of CH that have the potential to move fine sediment or contaminants downstream to this habitat. The remaining portions of this project are located over 1,000 feet from CH and use of heavy equipment at these sites would not create a direct causal mechanism for fine sediment or chemicals to reach CH.

Probability: The probability of direct effect would be dependent on each site location and the environmental conditions at the time the project is implemented. Specifically, increased sediment production in stream systems has been shown to adversely affect Pacific Northwest salmonid species through reduction in gravel permeability and reduced egg to fry survival (Cederholm et al. 1980; Furniss et al. 1991). Further, sediment can reduce macroinvertebrate production and fill pools, reducing habitat quantity and salmonid food availability (Suttle et al. 2004; Harvey et al. 2009). A direct linkage also exists between sediment supply and stream habitat indicators such as gravel permeability and pool depth (Cover et al. 2008). Likewise, inverse relationships exist between sediment-related stream habitat indicators and fish survival (Suttle et al. 2004; Harvey et al. 2009).

Magnitude: The magnitude of fine sediment is predicted to be very minimal, lasting no longer than two weeks at a maximum and is likely to directly affect the CH.

Stormproofing, road storage, and road decommissioning would reduce road miles in the Sucker Creek watershed.

Sediment and pool character and quality effects

Forest roads are known to contribute to the source of sediment to fish habitat.

Proximity: All of the roads described for this project are upstream of listed fish and aquatic species and their habitat. Each of these sites has the potential to move fine sediment or contaminants downstream to this habitat.

Probability: The probability would be dependent on each site location and the conditions of the environment at the time the project is implemented.

Magnitude: Thirty miles of road reduction within the Sucker Creek watershed would occur, reducing density from 2.5 to 2.1 miles per square mile. Forest roads built for timber harvest and access to other natural resources can be significant sources of sediment to aquatic systems.

Summary of Direct Effects

The use of heavy equipment presents a direct causal mechanism for sediment delivery to CH which would likely affect the behavior of the fish.

The reduction in roads within the watershed is part of the watershed condition indicators specifically road density/location and leads to a long term beneficial effect to these indicators.

Effects from all action alternatives would be beneficial to fish and aquatic organisms in the long term. There would be some short-term detrimental effects caused by an increase in turbidity as a result of removing culverts and legacy structures, and recontouring slopes where culverts are removed in close proximity to CH. These short-term effects are expected to last no longer than 2 weeks.

Indirect Effects

Stormproofing, Road Storage, and Road Decommissioning

Alternative 2 changes the current environmental conditions within the watershed and could result in short- and long-term indirect effects to water quality (temperature, chemical contaminants or nutrients, sediment, pool character and quality, streambank condition, floodplain connectivity)

Proximity: The closer the project site is to CH the more beneficial the long-term effect could be for the affected species and habitat. The hydrology report lists the amount or work that would be implemented within 300 feet of the stream course along with the amount of sediment likely to be delivered to the stream channel at each stream crossing. The causal mechanism for indirect effect for stormproofing, road storage, and road decommissioning are the changes to the sediment budget associated with road treatments including biological criteria in Sucker Creek. No changes are expected in water temperature, dissolved oxygen, large wood, hazardous materials or any other water quality or habitat parameter from any of the proposed activities.

Probability: The project would have long-term indirect positive effects on CH, due to a reduction in the amount of sediment that could be available for sediment delivery into the stream channels. Short term negative effects are likely to occur during project implementation or after the first rain storm where stormproofing, road storage or road decommissioning activities have been implemented.

Magnitude: Seetable 2, table 3, and table 4 for exact quantities of sediment that are available for sediment delivery within each subwatershed.

Summary of Indirect Effects

There would be a short-term negative and long-term beneficial effect to for water quality (temperature, chemical contaminants/nutrients, sediment, pool character and quality, streambank condition, floodplain connectivity) from stormproofing, road storage, and road decommissioning within the action area. The project activities provide a mechanism for potential reduction in upland erosion and sediment influx into stream networks, restoring the channel connections and streambanks[8].

Effects to Potentially Affected Aquatic Species and Habitats

SONCC Chinook Salmon is found within the Sucker Creek watershed and may experience the same effect as the SONCC Coho.

Namamyia plutonis, a caddisfly species, is found within the Oregon coast range and Cascade Range, and suitable habitat may exist at any of the stream sites on Wild Rivers Ranger District in the Sucker Creek watershed. Though this species has not been documented on the Wild Rivers Ranger District, the project may impact *N. plutonis* by delivering sediment to the habitat or crushing the individuals if they are present because they are small and live in and near streams; possibly where heavy equipment would be used for implementation of project elements. Following implementation of the project element(s), each site would be vegetated utilizing native plants and shrubs, accelerating the growth and establishment of riparian vegetation.

Western ridged mussels have been found in the Rogue River. Suitable habitat for this species is typical of some of the stream channel habitat that may be at or immediately adjacent to some of the project sites within the action area. Though, this species is not known to occur within the action area. The potential for effects to this species is very low. If present within the project area, the western ridged mussel may encounter some increase in fine sediment. These sediment effects would be mitigated through the implementation of the erosion control plan submitted for this project.

This project would have similar sediment-related effects on all other aquatic species and fish as described above for the TES species. The project may also remove culverts that are current barriers to aquatic species, potentially facilitating upstream access to new habitats.

Cumulative Effects

Cumulative effects for alternatives 1 and 2 are those that result from the incremental accumulations of all land management activities across all ownerships. In the Sucker Creek watershed. In the Sucker Creek watershed, historic land management activities such as hydraulic mining, channelization, riparian timber harvest, and road construction have had an enduring and significant impact on salmonid production (USDA Forest Service 2006). The amount of sediment delivery that could enter any of the water bodies from the project activities would be a nominal

[8] Detailed effects can be reviewed in the Reinitiation of the Endangered Species Act Section 7 Formal Programmatic Conference and Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Aquatic Restoration Activities in the States of Oregon and Washington (2013 ARBO) for categories #12. Road and Trail Erosion Control and Decommissioning.

amount and only occur for a short duration. It is unlikely that the sediment that would enter a water body would be measurable and it is determined that the most likely impact salmon fisheries or aquatic species would endure is individual displacement within the immediate area of the work sites. Consequently, it is concluded that project generated sediment would not be of sufficient quantity to result in a cumulative sediment effect with other projects within the watershed.

Since adoption of the Northwest Forest Plan in 1994, many of the Sucker Creek tributaries on public land are likely recovering from prior management activities due to current management guidelines and policies. For example, Gallo et al. (2005) and Reeves et al. (2006) assessed 250 sixth-field watersheds in the Pacific Northwest and found a general increase in stream habitat quality in the first 10 years after the adoption of the Northwest Forest Plan, particularly in key watersheds and late-successional reserves. Sucker and Grayback Creeks are key watersheds. The Sucker Creek watershed is one of the highest priorities for watershed restoration (containing 2 of 5 priority subwatersheds for watershed restoration) on the Rogue River-Siskiyou National Forest (USDA Forest Service 2011), with several significant watershed restoration projects conducted over the last decade. In addition to protection by Northwest Forest Plan standards and guidelines, the Sucker Creek watershed has several other active restoration projects ongoing including fuels reduction, riparian thinning and large wood placement. Finally, this watershed is almost entirely forest or rural residential land cover, a land use pattern that has shown benefit for ensuring Coho Salmon viability when compared to urbanization (Bilby and Mollot 2008).

Comparison of Effects by Alternative

Table 27. Comparison of effects to aquatic biota for each alternative by activity type

Alternative	Stormproofing	Road Storage	Road decommissioning	Road to non-motorized trail conversion
1 (no action)	Negative (short term) and Beneficial (long term))	Not applicable	Not applicable	Not applicable
2 (action)	Negative (short term) and Beneficial (long term)	Neutral	Negative (short term) and Beneficial (long term)	Neutral

Differences between the two alternatives could be measurable and biologically important based on predicted background erosion rates, forecasted sediment reduction, and permeability-survival relationships.

The no-action alternative would not alter the existing road treatments that may occur in the Sucker Creek watershed on the RRSNF. Alternatives 1 and 2 could have short-term negative effects due to sediment delivery from road related activities; however, there would be a long-term beneficial effect from reduction of road generated fine sediment that can embed gravels and fill pools. The primary effect would be a decrease in upland erosion and sediment influx into stream channels, associated with storm proofing, road storage and road decommissioning activities within the watershed. Alternative 1 would result in a less positive long term effects and have less negative short-term effects than alternative 2, as only a limited amount of stormproofing would occur. Alternative 2 would result in the most beneficial long term effects despite any short term sediment effects that may occur.

Effects Determinations

Alternative 1

Alternative 1 could have short-term indirect effects to SONCC Coho Salmon, SONCC Coho CH, SONCC Chinook Salmon, western ridged mussel, and *N. plutonis*.

Alternative 1 would have no effect on OC Coho Salmon, S. DPS North American Green Sturgeon or S. DPS Pacific Eulachon, PC Chum Salmon, OC Steelhead, Highcap lanx, Scale lanx, Robust walker, Pacific walker, or Haddock's Rhyacophilan caddisfly.

Alternative 2

Alternative 2 could have short-term direct, and short- and long-term indirect effects. Based on a review of best available science and my professional judgment, I find direct, indirect, and no cumulative effects from alternative 2 of the Sucker Legacy Roads and Trails Project. Consequently, a determination of **"May Affect, Beneficial"** and **"Likely to Adversely Affect"** to SONCC Coho Salmon, and its critical habitat is rendered.

A determination of **"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"** is made for the SONCC Chinook salmon, Western ridged mussel, and *N. plutonis*. The reason for a negative effect is due to short term sediment delivery from culvert removals and movement of sediment because of direct disturbance of the stream channel during project implementation. A long-term beneficial effect is a result of a long term reduction of road generated fine sediment that can embed gravels and fill pools.

Essential Fish Habitat is the same as Critical Habitat in the action area. Therefore, the same determination of effects applies to EFH, as was disclosed above for CH. The project Sucker Legacy Roads and Trails Project has a **"Beneficial Impact"** and **"Likely to Adversely Affect"** Essential Fish Habitat for Coho Salmon or Chinook Salmon.

Because this project fits under the categories described in the Re-initiation of the Endangered Species Act Section 7 Formal Programmatic Conference and Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Aquatic Restoration Activities in the States of Oregon and Washington (2013 ARBO) for category #12. Road and Trail Erosion Control and Decommissioning, no further consultation with the National Marine Fisheries Service is required provided project design criteria are applied (chapter 2).

Table 28. Summary of Conclusion of Effects for TES

Species	No Action	Modified Proposed Action
SONCC coho	BI-LAA	BI-LAA
SONCC Coho CH	BI-LAA	BI-LAA
SONCC Coho EFH	BI-LAA	BI-LAA
OC coho	NE	NE
OC coho CH	NE	NE
OC coho EFH	NE	NE
S. DPS Pacific eulachon	NE	NE
S. DPS North American green sturgeon	NE	NE
SONCC Chinook salmon	BI-MIIH	BI-MIIH
PC chum salmon	NI	NI
OC steelhead	NI	NI
Western ridged mussel	BI-MIIH	BI-MIIH
Highcap lanx	NI	NI
Scale lanx	NI	NI
Robust walker	NI	NI
Pacific walker	NI	NI
Haddock's Rhyacophilan caddisfly	NI	NI
A caddisfly	BI-MIIH	BI-MIIH

Note:

LAA= Likely to Adversely Affect; NE = No Effect**; BI-NLAA** = Beneficial, Not Likely to Adversely Affect; **NI** = No Impact; **MIIH** = 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; **BI** = Beneficial Impact

Roads

Introduction

While roads often provide important access and transportation, their presence can also influence the habitat quality, hydrology, geomorphology, and ecosystem processes of watersheds. The Sucker Creek watershed was selected for treatment because it has been identified as one of the top three priority watersheds on the Rogue River-Siskiyou National Forest for watershed restoration since 2006. This analysis is going to focus on changes to road access and maintenance costs in the Sucker Creek watershed from proposed project activities (identified in chapter 2). The transportation report is summarized and referenced throughout this section and is available for full review in the project files.

Affected Environment

Current policy requires the Forest Service to undertake a “scientifically-based” road analysis procedure, at appropriate scales and coordinated with other ecosystem analyses, to make better decisions regarding road management. Roads analysis at the forest scale will generally provide a broad context for informing road management decisions. Site-specific projects may be informed by project-scale analysis.

Forest Service responsible officials are directed to use a roads analysis process to ensure that road management decisions are based on identification and consideration of social and ecological effects. Roads Analysis: Informing Decisions about Managing the National Forest Transportation System (Miscellaneous Report FS-643) has been provided as guidance for conducting a science-based roads analysis. This document describes the process that was used to evaluate the current road system for current and future needs associated with the Sucker Creek Legacy Roads and Trails Project. The goal of this project-scale analysis is to compare the need for roads to access the project planning area, with the effects roads have on natural resources.

At the forest scale and in conformance with the roads management policy, a more general assessment of roads was conducted and compiled in 2004 (Rogue River-Siskiyou National Forest Roads Analysis). A forestwide revision of this road management policy will be completed by 2015.

Current Road Inventory – Sucker Creek Watershed

It is important to note that roads[9] occurring on Forest Service managed lands are not public roads in the same sense as roads under the jurisdiction of public road agencies, such as states or counties. Forest Service roads are not intended to meet the transportation needs of the public at large. Instead, they are authorized only for the administration and utilization of National Forest System lands. Although generally open and available for public use, such use is at the discretion of the Secretary of Agriculture. Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet specific management direction.

The Roads Analysis process starts with an inventory of all roads in the project planning area (Sucker Creek watershed). There are various scales that can be used when assessing road systems. This roads analysis utilizes a project-scale road analysis area. The analysis area for this assessment includes those roads located in the Sucker Creek watershed. A database was developed to inventory all roads that are within the analysis area. Digital files representing road locations were secured from the Forest Service geographic information systems (GIS) for the Rogue River-Siskiyou National Forest.

a. Classified Road System

The following discussion includes the basis for use of classified (permanent system) roads. National Forest System roads are under the jurisdiction of the Forest Service and are deemed necessary for protection, administration, and use of National Forest System lands. These roads are inventoried, maintained, and managed by the Forest Service. Generally, these National Forest System roads are identified as maintenance level 1 to 5, under the following definitions:

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[9] The following definitions are from Forest Service Manual (FSM) 7705 and are pertinent to this roads analysis process.

> **Forest Roads**. As defined in Title 23, Section 101 of the United States Code (23 U.S.C. 101), any road wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

Roads are further defined:

> **Road.** A motor vehicle travel way over 50 inches wide, unless designated and managed as a trail (36 CFR 212.1). For this analysis, a road may be classified, unclassified, or temporary.
>
> **a. Classified Roads**. Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service.

- **Level 1** – Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. While being maintained at level 1, roads are closed to vehicular traffic, both public and administrative motorized vehicle use.
- **Level 2** – Assigned to roads open for use by high clearance vehicles. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.
- **Level 3** – Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material.
- **Level 4** – Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.
- **Level 5** – These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated.

Most of the classified road system within the Sucker Creek watershed is currently managed as Maintenance Level 3. There are approximately 200 miles of roads within the Sucker Creek watershed.

The following is a brief description of the three key terms used in classifying the proposed work to be performed within the watershed:

- Stormproof – Roads proposed for stormproofing will be identified as Maintenance Levels 2, 3 and 4
- Storage – Road proposed for storage, needed within the next 10 years, will be assigned Maintenance Level 1
- Decommissioned – Road proposed for decommissioning will be removed from the Forest Service road system

b. Analysis of Existing Roads

Roads analysis identified a need for most of the existing roads for long-term management of the Forest, and for access to recreation opportunities. Most of the existing roads are typically open to the public and maintained for vehicular traffic. These existing roads provide the long-term transportation network necessary to meet forest management objectives. The “backbone” roads in Sucker Creek are roads that are currently needed and into the future for multiple purposes. They provide important access to Oregon Caves National Monument, for land management, mining, and recreation needs in the watershed.

Table 29. The "backbone" system roads in Sucker Creek watershed

Forest Service System Road	Miles	Modified Proposed Action	Accesses
4600	6.0	State Highway	Oregon Caves National Monument and 4611, 4612,4614 road systems
4611	10.9	Stormproof	Provides an alternative route to the city of Williams and also serves as part of an escape route for the Oregon Caves National Monument. Also provides access to private land inholdings
4612	9.7	Stormproof	Provides access to the Red Buttes Wilderness and Mining Claims
4613	6.9	Stormproof	Provides access to Bigelow Lakes Trail Head and private land inholdings
4614	4.5	Stormproof	Provides access to The Oregon Caves National Monument trail system and Mount Elijah trail
4611-079	3.9	Stormproof	Serves as connector for the Oregon Caves National Monument Escape route
4611-070	4.3 1.4	Stormproof Decommission	Serves as connector for the Oregon Caves National Monument Escape route optional route and access to Bigelow Lakes Trail
4611-960	2.9	Stormproof	Serves as connector for the Oregon Caves National Monument Escape route

Continued Decline in Road Maintenance Funding

The existing road system is programmed to receive annual maintenance in accordance with established road management objectives. However, congressionally appropriated funds for both road and trail maintenance have steadily declined in since 1990 and the Forest no longer has the traditional road and trail crew resources. A portion of the maintenance program is funded under the Secure Rural Schools and Community Self- Determination Act of 2000 (Public Law 106-393). Road and trail maintenance funding is a year to year issue. OHV grants are occasionally obtained from Oregon State Parks and Recreation Department for maintenance and law enforcement purposes on motorized trails.

In 1990 the national Forest Service maintenance funding was approximately $90 million with another approximately $30 million in commercial user maintenance. In 2012 this picture has declined to approximately $20 million nationally and approximately $10 million in commercial user maintenance. Consequently the amount of deferred road maintenance on the forest continues to grow each year. Currently on the Rogue River-Siskiyou NF we have more than 5,200 miles of total roads with $111 million in deferred maintenance and $11 million required to maintain the 5,200 miles to agency standards. For fiscal year 2014 the forest received less than $900,000 total road maintenance budget. This is complicated by the fact that structures such as culverts are not only aging but are beginning to fail at an alarming rate as many of them are beyond their designed life.

Environmental Consequences

Effects Mechanisms and Analysis Framework

Effects mechanisms serve as tools to quantify the effects to offer a basis for comparing the effects of management practices. This analysis will focus on changes to National Forest System roads using the following effects mechanisms:

- Miles of open road (Maintenance Levels 2 to 5)
- Miles of closed road (Maintenance Level 1)
- Miles of road decommissioning
- Miles of road to convert to trails

The spatial bounds of this analysis is confined to National Forest System roads in the Sucker Creek watershed. This has been deemed appropriate because as the Sucker Creek watershed is the third highest ranking watershed on the forest. The forest has selected to conduct these types of analyses by watershed priorities.

Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

There are no direct effects of choosing the no-action alternative. However, the indirect and cumulative effects of not taking action would continue to add to the backlog of road maintenance in the watershed. This backlog of work would increase the risk of road and drainage structures failing and depositing huge amounts of sediment into the streams of the watershed. This sediment loading would deteriorate the water quality of these associated streams. Continued forest direction of no to little road maintenance of these roads would allow these roads to naturally close themselves. This means that the roads side brush would continue to close of the roads, surface water would continue to erode the surface making them unpassable motorized traffic and plugged drainages will wash roadway fills thus eliminating the roadbed.

Alternative 2 – Modified Proposed Action

Direct and Indirect Effects

The direct effect to the transportation system in the Sucker Creek watershed of implementing alternative 2 - modified proposed action, would be decommissioning 28 miles of National Forest System roads, putting 31 miles of NFS roads into storage, converting 3 miles of NFS road into non-motorized trail, and stormproofing 118 miles of NFS road. The estimated cost to implement this alternative is approximately $5 million.

The indirect effects would be:

- Improved road condition and drivability on 118 miles of road proposed for stormproofing
- Limitation of access to 31 miles of road for management and emergency access only on roads proposed for closure
- Loss of access to 28 miles of roads proposed for decommissioning
- Change in access to 3 miles of roads proposed for conversion of road to non-motorized trail

Cumulative Effects

The effects of the Sucker Creek Legacy Roads and Trails Project overlap with the effects of the decision for Motorized Vehicle Use on the Rogue River-Siskiyou National Forest Project (Travel Management Plan), which implements the November 9, 2005, *Final Rule for Travel Management; Designated Routes and Areas for Motor Vehicle Use.* In implementing this rule, the Rogue River-Siskiyou National Forest designated those roads, trails, and areas open to motorized vehicles; the class of vehicles and, if appropriate, the times of year for which use is authorized; and prohibited motor vehicle use off that designated system (cross-country travel). Following a decision on this proposal, the Forest will publish a Motorized Vehicle Use Map (MVUM) designating all National Forest System roads, trails, and areas open for motor vehicle use by the public on the Forest. This decision and resulting motor vehicle use map is anticipated to occur late 2014. This map would designate 151 miles of road, 6 miles of motorized trail, and 25 miles of non-motorized trail open to the public in the Sucker Creek watershed. Implementation of the Sucker Creek Legacy Roads and Trails Project would change that to 126 miles of road, 6 miles of motorized trail, and 28 miles of non-motorized trail open to the public in the watershed. These changes would be reflected in updates to the MVUM as the project is implemented. Implementation is expected to take approximately 5 years, depending on funding.

Conclusion

In conclusion, this modified proposed action will correct the road deficiencies that exist in the Sucker Creek watershed by:

- Replacing failing and undersized culverts, which would greatly reduce the risk of losing large roadway fills and portions of roadways.
- Correcting roadway surface issues by placing new surfacing, constructing rolling dips and drivable water bars, which would drain surface water from the roadway surface thus minimizing surface erosion and scour; in turn greatly reducing the need of annual maintenance.
- Closing and decommissioning roads and removing culverts, thus restoring the drainage. This will nearly eliminate the surface erosion and create stabilized drainages.

These activities will improve water quality as sediment transportation will thus be negligible. This will also reduce the annual maintenance costs and reduce the risk level of road failures of the watershed.

Mining

Introduction

The discovery of gold was the catalyst for development of the Sucker Creek watershed. There were two rushes to Sucker Creek – one in 1853, and one in 1856 – attracting about 2,000 people during the height of activity. Mining has been sporadic since that time. One larger-scale operation exists on Sucker Creek today; most of the other operations that occur over the estimated 500 claims are small. The effects of historic, large scale mining on riparian and aquatic habitat remain.

Simple panning was the earliest technique used to mine placer gold in the Sucker Creek area. Gold was found the full length of the drainage, but was concentrated between Grayback and Bolan creeks. By the late 1850s, large hydraulic operations had developed, employing huge numbers of imported laborers, primarily Chinese. This technique allowed miners to wash entire hillsides through their sluice boxes, and accounts for most of the landscape alterations (large headwalls and vast tailings piles) visible today. Hydraulic mining tapered off by the early 1880s.

The turn of the century saw a resurgence of mining activities. Various companies arrived from outside the area and invested capital in large-scale developments. Lode (or "hard rock" or "ledge") mining began to rival placer mining at this time. The Briggs Pocket Mine, near the Siskiyou Crest, yielded 2,000 ounces of gold from three shallow pits. The 1930s saw a renewed interest in gold mining as individuals or loosely organized small groups of miners tried to make ends meet during the hard times of the depression era. Overall, these were small-scale operations. During World War II, the mining of non-strategic minerals was halted by the War Productions Board. Following the war, costs of labor and supplies had increased so much that mining, for the most part, was no longer profitable.

Affected Environment

Mining continues at present levels. Refined land use practices and restoration emphasis has resulted in less riparian disturbance.

Use of water in Sucker Creek also has a long history dating back to the earliest mining days when water was needed to operate hydraulic systems (little giant - monitors). Competition among miners and soon thereafter with ranchers downstream was only the beginning of what has become a major issue in the watershed. Today, existing water supplies remain inadequate to satisfy all the users within the watershed.

Local knowledge and written history indicate that Cave Creek had little or no mining. However, renewed mining activity along Sucker Creek (Throop and Smith, 1986) includes settling ponds at the mouth of Cave Creek that have been pumped and rechanneled. Starting in 2007 this area was mined again by the Carlon's through 2011 leaving several large settling ponds filled with water.

Today, two kinds of mining continue within the Grayback/Sucker Watershed, placer and lode mining. Most of the mining on Forest Service lands occurs along Sucker Creek. The lands and mineral specialist with the FS estimated that there were about 200 to 500 claims (most of them placer claims) along Sucker Creek. The values of these claims have been recorded as among the most valuable in southwestern Oregon.

Effects for Mining Access

Effects for mining are based on access to mining claims. Miner need to have reasonable access to their mining claims. This could be for vehicles, ATVs or foot travel. The modified proposed action generated comments from miners that roads needed for access to claims were proposed for decommissioning. The miners were contacted to find out the type of access they needed. The roads were re-evaluated by the IDT to determine the risk of sediment delivery to the aquatic ecosystem. If there was a low risk of sediment delivery, no road stream crossings, the road treatment was changed from decommissioning to stormproofing, knowing that road would remain stable with little or no road maintenance. If there were stream crossings that created a risk of sediment delivery, then the road was changed from decommissioning to storage where the stream crossing would be removed leaving a trail for foot access to the mining claims.

- **Modify NFS Road 4612-058 from decommissioning to stormproofing –** This road was initially proposed for road decommissioning to reduce road density for wildlife benefits; this road does not have the issue with sediment delivery to streams. During scoping several commenters noted that this road accesses several mining claims, one that has an environmental assessment nearly completed and a second claim that has a plan of operations that has been submitted to the Forest Service. Therefore, this road was modified to stormproofing to maintain access to these mining claims.

- **Modify a portion of NFS Road 4612-069 from decommissioning to stormproofing –** This road was proposed for road decommissioning to reduce sediment delivery to streams in the area; there are several culverts on the road that are problematic. Several commenters brought forward the information that the road is used by miners, hikers, and hunters. The first 0.25 miles in particular is used to park cars and for camping. Therefore, alternative 2 was modified to stormproof the first 0.25 miles of the road (to Sucker Creek), and then decommission the remainder of the road; the first 0.25 miles of National Forest System Road 4612-069 does not have issues with sediment delivery to nearby streams.
- **Modify NFS Road 4703-440 from decommissioning to storage –** This road segment was initially proposed for decommissioning to reduce sediment delivery to streams and to reduce road density for wildlife. During scoping a commenter brought up a concern that this road is used to access several mining claims and for recreation by hunters. Therefore, this road segment was modified from decommissioning to storage to maintain access to this area.
- **Modify NFS Road 4703-458 decommissioning to stormproofing –** This road was initially proposed for road decommissioning to reduce road density for wildlife; this road does not have the issue with sediment delivery to streams. During scoping a commenter brought up a concern that this road is used to access several mining claims. Therefore, this road segment was modified to stormproofing to maintain access to these mining claims.

Compliance with Other Laws, Regulations, and Executive Orders

This section deals with those effects for which disclosure is required by NEPA regulations, Forest Service policy or regulation, various executive orders, or other laws and direction covering environmental analysis and documentation. In many cases, the information found here is also located elsewhere in this document. In other cases, the effects are not necessarily connected to any particular resource area.

Clean Air Act

The alternatives are designed to meet the National Ambient Air Quality Standards through avoidance of practices that degrade air quality below health and visibility standards. The project is consistent with the 1990 Clean Air Act and the 1977 Clean Air Act and its amendments.

The Clean Water Act

This act establishes a non-degradation policy for all federally proposed projects. Compliance with the Clean Water Act would be accomplished through planning, application, and monitoring best management practices (BMPs). Based on the analysis presented in this EA, TMDL requirements would be met in each alternative.

Executive Orders

Floodplains and Wetlands

Executive Order 11988 requires government agencies to take actions that reduce the risk of loss due to floods, to minimize the impact of floods on human health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

Executive Order 11990 requires government agencies to take actions that minimize the destruction, loss, or degradation of wetlands. There are no wetlands associated with Executive Order 11990 that exist within the project area. If any wetlands were to be located during project activities, appropriate buffers would be provided in compliance with the ACS of the Northwest Forest Plan.

Migratory Birds

Executive Order 13186 –A Memorandum of Understanding was signed between the USFS and USFWS to complement the January 2001, Executive Order. There are several bird species recognized as neo-tropical migrants on the Rogue River-Siskiyou National Forest.

Facilitation of Hunting Heritage and Wildlife Conservation

Executive Order 13443 –August 17, 2007, Executive Order requires Federal agencies "to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat."

Energy Requirements and Conservation Potential

Some form of energy would be necessary for projects using mechanized equipment. Project activities would involve both heavy and small machines, which would result in minor energy consumption.

Environmental Justice and Civil Rights

Environmental Justice – Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," directs federal agencies to integrate environmental justice considerations into federal programs and activities. Environmental justice means that, to the greatest extent practical and permitted by law, all populations are provided the opportunity to comment before decisions are rendered or are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by government programs and activities affecting human health or the environment.

One goal of Executive Order 12898 is to provide, to the greatest extent practicable, the opportunity for minority and low-income populations to participate in planning, analysis, and decision-making that affects their health or environment, including identification of program needs and designs. This public involvement process for the Sucker Creek Legacy Roads and Trails Project has been conducted under Departmental regulation 5600-2, December 15, 1997, including the Environmental Justice Flowchart (Appendix E of the regulation). The project, its purpose and need, and area of potential effect have been clearly defined.

There would be no adverse effects to human health and no alternative has been determined to disproportionately affect minority or low income populations. The alternatives do not appear to have a disproportionately high or adverse effect on minority or low-income populations. Scoping did not reveal any issues or concerns associated with the principles of environmental justice. No mitigation measures to offset or ameliorate adverse effects to these populations have been identified. All interested and affected parties will continue to be involved with the public involvement and decision process.

United States Department of Agriculture (USDA) Civil Rights Policy – The Civil Rights Policy for the USDA, Departmental Regulation 4300-4 dated May 30, 2003, states that the following are among the civil rights strategic goals: (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities.

Disparate impact, a theory of discrimination, has been applied to the Sucker Creek Legacy Roads and Trails Project's planning process in order to reveal any such negative effects that may unfairly and inequitably impact beneficiaries regarding program development, administration, and delivery. The objectives of this review and analysis are to prevent disparate treatment and minimize discrimination against minorities, women and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

Persons with Disabilities – Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. No groups or classes or persons were found to be disproportionately negatively affected by this project. This project would apply equally to all members of the public, and therefore is not discriminatory to any person or group.

In the 2010 American Community Survey, people were defined as having a disability if they responded "yes" to a sensory, physical, cognitive, self-care, go-outside-home, or employment disability. Children under 5 years of age were only included in the hearing and vision questions.

The Sucker Creek Legacy Roads and Trails project area is located within Josephine County and according to the U.S. Census Bureau, 2010 American Community Survey percentage of the population with disabilities in the county is 14.3 percent. For comparison, the rate for all of Oregon is 13.8 percent and the rate for the nation is 11.9 percent. The total population affected by a disability for each geographic extent was tallied for the civilian non-institutionalized population.

Determination that a Civil Rights Impact Analysis (CRIA) is not needed – The scoping process was initiated in the Grants Pass Daily Courier on October 1, 2013. The District received 15 emails and letters during the public scoping period. The interdisciplinary team analyzed these emails and letters using an established analytical process known as content analysis. Comments are made by those who are interested in specific issues, favor an alternative, have concerns over the plan or analysis, or other concerns. People self-select to participate and are not required to provide any information concerning individual demographic information. Based on public comment, there were no issues raised that would suggest, or from which one may infer, that implementation of the Sucker Creek Legacy Roads and Trails Project would affect groups or classes of persons, negatively, because of one or more prohibited bases.

Short-term Uses and Long-term Productivity

Maintaining long-term site productivity is the basis for the ecosystem being able to meet the needs of the land and people through time. The maintenance of productivity is required through legislation: the Organic Act of 1897, the Multiple Use Sustained Yield Act of 1960, the National Environmental Policy Act of 1969, and the National Forest Management Act of 1976.

Long-term productivity and sustainability is the inherent potential of the land (ecosystem) to produce a certain level of vegetation and associated processes, such as wildlife, water, and clean air, indefinitely into the future.

Fixed components influencing productivity include local climate, topographic features, and soil type. Components affecting productivity that can be changed include: soil volume, porosity, water availability, chemistry, and biology. Factors that can affect these components include: compaction and soil displacement from timber harvest and fuels treatment activities; loss of soil organic matter; modification of the water table or moisture-holding capacity; and reductions in the functioning of soil organisms from compaction or displacement.

Unavoidable Adverse Effects

Implementation of any action alternative would result in some adverse environmental effects that cannot be avoided. For example, disturbance and removal of vegetation and soil would have some adverse effects on sediment delivery. However, the magnitude of these effects relative to the proposed project would be small and within prescribed standards and guidelines of the Siskiyou LRMP and the Northwest Forest Plan. The degree of adverse effects is substantially reduced by following both plans' standards and guidelines, and by including the mitigation measures and design criteria outlined in chapter II. See the issues discussed earlier in this chapter, by resource area, for more information.

Irreversible and Irretrievable Effects

Irreversible commitment of resources refers to a loss of future options with nonrenewable resources. An Irretrievable commitment of resources refers to loss of opportunity due to a particular choice of resource uses.

The soil and water protection measures identified in the Siskiyou Forest Plan Standards and Guidelines, water quality BMPs, and mitigation measures and design criteria listed in chapter II of this document, are designed to avoid or minimize the potential for irreversible losses from the proposed management actions.

Chapter IV. Coordination

Interdisciplinary Team Members

A variety of specialists and managers from the Rogue River-Siskiyou National Forest contributed information for this project.

Matt Paciorek ~ Wild Rivers District Ranger

Chris Park ~ Team Lead/Forest Hydrologist

Jamie Krezelok ~ Hydrologist

Sasha Fertig/Shannon Downey ~ Environmental Coordinator

Joni Brazier ~ Soil Scientist

Steve Anderson ~ Fire and Fuels Specialist

Rob Barnhart ~ Silviculturist

Stuart Osbrack ~ Botanist

Bonnie Allison ~ Wildlife Biologist

Karla Cottom ~ Fisheries Biologist

Scott Blower ~ Road Development Engineer

Dave Knutson ~ Archaeological Technician

Brian Long ~ Recreation Specialist

Robert Shoemaker ~ Forest Minerals Administrator

Mark Hocken ~ Range Specialist

Gary Einck ~ Realty Specialist

Janice Schultz ~ Writer/Editor, TEAMS Enterprise Unit

Agencies and Persons Consulted

The Forest Service consulted the following individuals, Federal, State, tribal, and local agencies during the development of this environmental assessment:

Federal, State, and Local Agencies

Army Corps of Engineers, Federal Highways Administration – Oregon Division, Josephine County Commissioners, Josephine County Forestry, Josephine County Planning Department, Josephine County Sheriff's Office, Klamath National Forest, Medford Bureau of Land Management, Oregon Caves National Monument, Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, Oregon Natural Resources Office

Tribes

Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of the Siletz Indians of Oregon

Others

American Bird Conservancy, American Forest Resource Council, American Hiking Society, American Indian Cultural Center, Big Wildlife, Blue Ribbon Coalition, Capital Trail Vehicle Association, Cascadia Wildlands Project, Central Oregon Motorcycle & ATV Club, Deschutes County 4-Wheelers, Emerald Trail Riders Association, Friends of the Kalmiopsis, Illinois River Watershed Council, Josephine County Library, Kalmiopsis Audubon Society, Klamath Siskiyou Wildlands Center, Motorcycle Riders Association, OHV Allocations, Oregon Hunter's Association, Oregon Motorcycle Riders Association, Oregon Wild, Pacific Crest Trail Association, Pacific Northwest 4-Wheel Drive Association, Recreation Outdoors Coalition, Rogue Group Sierra Club, Rogue Riverkeeper, Siskiyou Audubon Society, Siskiyou Project, Southwest Oregon Mining Association, The Nature Conservancy, The Wilderness Society, Waldo Mining District, Western Environmental Law Center, Wildlands CPR, and other interested citizens

Opportunity to Object under 36 CFR 218

This project is subject to the objection process specified in 36 CFR §218, subparts A and B. Individuals, organizations, or tribal entities who submit specific written comments during the scoping period, the comment period following release of the environmental assessment, or any other period during which the responsible official seeks written comment are eligible to file an objection. The objection process provides an opportunity to have unresolved concerns receive independent review by the Forest Service prior to a final decision being made by the responsible official.

Specific written comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the responsible official to consider. Comments must include your name, postal address, the title of the proposed project, and your signature or other verification of identity. Comments must be submitted (received or postmarked) within 30 days after the publication of the legal notice of opportunity to comment. Paragraphs (a)(3) and (a)(4) of §218.25 provide additional information on the required content and submission of comments to establish standing to object to a draft decision.

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Glossary

Even aged Management ~ "…a stand in which essentially all trees have been removed in one operation —note depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration" (Beaufait et. al. 1984).

Seed Tree Harvest ~ "…the cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment —note seed trees are usually removed after regeneration is established" (Beaufait et. al. 1984).

Shelterwood Harvest ~ "…the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment —note the sequence of treatments can include three types of cuttings: (a) an optional preparatory cut to enhance conditions for seed production, (b) an establishment cut to prepare the seed bed and to create a new age class, and (c) a removal cut to release established regeneration from competition with the overwood; cutting may be done uniformly throughout the stand (uniform shelterwood), in groups or patches (group shelterwood), or in strips (strip shelterwood); in a strip shelterwood, regeneration cuttings may progress against the prevailing wind" (Beaufait et. al. 1984).

Decommission ~ Roads are not needed for 20 years or more and or maybe accessed by other road networks not decommissioned by the modified proposed action.

Storage ~ Roads are not needed within the next 10 years or more due to previous treatments and or slow growing site conditions.

Storm Proofing ~ Roads are needed for treatment of managed stands within the next five years and or managed stand exist on a backbone road network that has multiple uses.

Appendices

Appendix A – Compliance with Aquatic Conservation Strategy

An integral part of the Northwest Forest Plan is the Aquatic Conservation Strategy (ACS). The ACS is intended to maintain and restore the ecological health of the watersheds and ecosystems within the Northwest Forest Plan area. On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the US Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA-Fisheries) and USFS and BLM (Agencies) in *Pacific Coast Fed. of Fishermen's Assn. et al. v. Natl. Marine Fisheries Service, et al. and American Forest Resource Council,* Civ. No. 04-1299RSM (W.D. Wash)((*PCFFA IV*). Based on violations of the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the Court set aside the USFWS Biological Opinion (March 18, 2004), the NOAA-Fisheries Biological Opinion for the ACS Amendment (March 19, 2004), the ACS Amendment Final Supplemental Environmental Impact Statement (FSEIS) (October 2003), and the ACS Amendment adopted by the Record of Decision dated March 22, 2004.

As a result of PCFFA IV, the Forest Service must now assess project consistency with the nine ACS objectives as was done prior to the 2004 Record of Decision for the ACS amendment. New project NEPA decisions must be consistent with the wording regarding ACS consistency, including consistency with the nine ACS objectives, as ACS consistency is described in the 1994 NWFP ROD on page B-10. In making the ACS consistency finding and to be guided by PCFFA IV, the decision maker must:

- Review projects against the ACS objectives at the project or site scale, rather than only at the watershed scale. This review can be accomplished through cumulative effects analyses (e.g., by evaluating the incremental effect of the project added to the existing condition, and the effects of other present and reasonably foreseeable future actions) on watershed conditions.
- Evaluate the immediate (short-term) impacts, as well as long-term impacts of an action.
- Provide a description of the existing watershed condition, including the important physical and biological components of the 5th field watershed.
- Provide written evidence that the decision maker considered relevant findings of watershed analysis.

The Northwest Forest Plan requires consistency with ACS with specific reference to nine ACS Objectives. Below, is a summation of the environmental analysis regarding consistency with the elements and components of the Objectives. Specific rationale may be found in other analysis documented under other resources, e.g., Soils, Fisheries, Wildlife, Botany.

Aquatic Conservation Strategy Objectives

This section focuses on the attainment of the nine Aquatic Conservation Strategy Objectives of the alternatives considered in detail, the response to the specific Standards and Guidelines associated with Riparian Reserves (NWFP C-33 & 34), and the attainment of Standards and Guidelines associated with Key Watersheds (NWFP B-19).

Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions. The baseline from which to assess maintaining or restoring the condition is developed through a Watershed Analysis. Improvement relates to restoring biological and physical processes within their ranges of natural variability.

The Standards and Guidelines are designed to focus the review of proposed and certain existing projects to determine compatibility with the Aquatic Conservation Strategy objectives. The Standards and Guidelines focus on "meeting" and "not preventing attainment" of Aquatic Conservation Strategy objectives. The intent is to ensure that a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives. The decision maker will use the results of watershed analysis to support the finding.

In order to make the finding that a project or management action "meets" or "does not prevent attainment" of the Aquatic Conservation Strategy objectives, the analysis must include a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management action maintains the existing condition or moves it within the range of natural variability.

The Northwest Forest Plan requires consistency with ACS with specific reference to nine ACS Objectives. Below is a summation of the environmental analysis regarding consistency with the elements and components of the objectives.

ACS 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.

Alternative 1 would result in failures of unmaintained road stream crossings and road ditch drains. There are approximately 480 stream crossings within the Sucker Creek watershed, none of which would be removed. Culverts with a high plug potential would be likely to fail during large storm events, causing large inputs of sediment to the stream system impacting water quality and stream health. With no treatments on any roads the potential sediment yield during a storm event would be approximately 245,000 cubic yards (Weppner and Weaver 2010, 2013). Future sediment delivery from the failure of these sites during storm events will not ensure protection of the aquatic system. This alternative does not meet the objective.

Alternative 2 would remove over 100 culverts reducing sediment delivery by approximately 150,000 cubic yards, or 70 percent. A reduction in sediment input would ensure protection of in-stream habitat and improve water quality. There would be reduction in the extended channel network currently associated with the road system, which would improve hillslope hydrology and dispersed subsurface flow. This would reduce the future risk of sediment delivery and ensure the protection of the aquatic system.

ACS Objective 2. Maintain and restore spatial and temporal connectivity within 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.

All of the alternatives would maintain the current condition since there are no new developments proposed. Under Alternative 2 approximately 31.4 miles of road would be decommissioned and over 100 culverts would be removed, which would improve the spatial and temporal connectivity within the stream systems.

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

Alternative 1 would result in failures of unmaintained road stream crossings and road ditch drains. Future sediment delivery of approximately 245,000 cubic yards could occur during storm events, which would increase pool filling and stream widening and instability. This would impact the physical integrity of the aquatic system. This alternative does not meet the objective.

Alternative 2 would reduce future sediment delivery from roads to streams by approximately 150,000 cubic yards reducing the risk of pool filling and stream widening and instability. This would improve the physical integrity of the aquatic system.

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

Alternative 1 would result in failures of unmaintained road stream crossings and road ditch drains. Future delivery of approximately 245,000 cubic yards of sediment from the failure of these sites during storm events would not ensure protection of the aquatic system. This could impact water quality, specifically turbidity and sedimentation. This alternative does not meet the objective.

Alternative 2 would reduce future sediment delivery to streams reducing turbidity during storm events and decreasing sediment input to the stream channel. This would improve sediment transport and protect spawning gravels and pool habitat improving water quality.

ACS 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.

Alternative 1 would result in failures of unmaintained road stream crossings and road ditch drains of approximately 245,000 cubic yards. These high sediment inputs have impacted the stream system through filling of spawning gravels and pools, which would continue. This alternative does not meet the objective.

Alternative 2 would reduce potential sediment yield from roads by approximately 150,000 cubic yards improving sediment transport throughout the stream system. This would reduce pool filling, stream widening, channel instability, and erosion.

ACS 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.

None of the alternatives would have a measurable effect on stream flow.

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

All of the alternatives would maintain the current condition.

ACS Objective 8. Maintain and restore the species composition and structural diversity of plant communities in Riparian Reserves 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.

Alternative 1 would maintain the current condition.

Alternative 2 would slightly improve riparian condition by decommissioning roads within riparian reserves allowing for revegetation with riparian plants along approximately 9 miles of road.

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

All of the alternatives would maintain the current condition.

Alternative 1 does not meet the Aquatic Conservation Strategy

Alternative 2 meets the Aquatic Conservation Strategy

Summary

This analysis indicates that alternative 1 would not be in compliance with the ACS listed in the Northwest Forest Plan. It would result in failures of unmaintained stream crossings. There are approximately 480 stream crossings within the Sucker Creek watershed, none of which would be removed; however, some of the high risk culverts on level 3 roads could be replaced during routine road maintenance. Culverts with a high plug potential would be likely to fail during large storm events, causing large inputs of sediment to the stream system impacting water quality and stream health. With no treatments on any roads the potential sediment yield during a storm event would be approximately 245,000 cubic yards (Weppner and Weaver 2010, 2013). Normal road maintenance could still occur under this alternative. This would reduce sediment yield by approximately 63,000 cubic yards, if done on all level 3 roads throughout the watershed.

The condition class of the watersheds would not improve in the priority watersheds and could be further degraded. The improvements made with the stream restoration projects could be impacted by filling pools with sediment and covering spawning gravels, reducing their effectiveness. Road density would remain at 2.5 miles per square mile and percent of stream within 300 feet of a perennial stream would remain at 38 percent, both of which result in functioning at risk ratings for these attributes (USDA Forest Service 2010).

Alternative 2 would be in compliance with the ACS and would reduce sediment input to the stream system by approximately 150,000 cubic yards, or 70 percent. Over 100 culverts would be removed with 90 of these being on road-stream crossings. Approximately 31.4 miles of road would be decommissioned reducing density from 2.5 to 2.1, which is a small reduction but does move that attribute to an improved condition within the Watershed Conservation Framework (USDA 2010). Percent of road within 300 feet of perennial streams would remain high at 33 percent; however, by removing the high risk culverts and stormproofing roads, there would be a lesser impact on sediment input to the stream system from these roads. A reduction in sediment input would ensure protection of in-stream habitat and improve water quality. There would be reduction in the extended channel network currently associated with the road system, which would improve hillslope hydrology and dispersed subsurface flow. Essential projects discussed in the WRAP associated with road restoration would be completed on top of those already completed during the stream restoration projects (USDA 2011). This would move subwatersheds that are currently functioning at risk toward, and may attain, proper functioning condition.

Appendix B – Applicable Best Management Practices

Best Management Practices (BMPs) are developed to comply with Section 208 of the Clean Water Act. BMPs have been certified by the State Water Quality Resources Control Board and approved by the Environmental Protection Agency (EPA) as the most effective way of protecting water quality from impacts stemming from non-point sources of pollution.

Forest Service National Best management Practices for Water Quality Management on National Forest System Lands, Volume 1 National Core BMP Technical Guide (BMPs, USDA Forest Service 2012) and the Region 6 General Water Quality Best Management Practices (USDA Forest Service, 1988) applicable to road and trail management would be implemented under the action alternative for the Sucker Creek Legacy Roads and Trails Project. These are identified here and are an integral part of implementation.

These practices have been applied in timber sales and road construction projects in watersheds over the last 20 years and have been found to be effective in protecting water quality within the Rogue River-Siskiyou National Forest. Specifically, effective application of the USDA Forest Service Region 6 BMPs has been found to maintain water quality that is in conformance with the Water Quality Objectives in the Rogue Basin Plan. USDA Forest Service Region 6 BMPs have been monitored and modified since their original implementation in 1979 to make them more effective. Numerous on-site monitoring has found the practices to be effective in maintaining water quality and protecting beneficial uses/resources (e.g., domestic use, anadromous and resident fish).

The following BMPs were selected for the Sucker Creek Legacy Roads and Trails Project. Site-specific design criteria to implement these BMPs would be refined during the course of project and contract planning and operations. Design criteria included in the proposed action are described in chapter 2.

National BMPs

Plan-2. Project Planning and Analysis

Plan-3. Aquatic Management Zone Planning

AqEco-1. Aquatic Ecosystem Improvement and Restoration Planning

AqEco-2. Operations in Aquatic Ecosystems

Fac-2. Facility Construction and Stormwater Control

Fac-10. Facility Site Reclamation

Rec-4. Motorized and Non-motorized Trails

Road-1. Travel Management Planning and Analysis

Road-3. Road Construction and Reconstruction

Road-4. Road Operations and Maintenance

Road-6. Road Storage and Decommissioning

Road-7. Stream Crossings

Road-9.	Parking and Storage Areas
Road-10.	Equipment Refueling and Servicing

Region 6 BMPs

R-2.	Erosion Control Plan
R-3.	Timing of Construction Activities
R-5.	Road Slope and Waste Area Stabilization (preventative)
R-6.	Dispersion of Subsurface Drainage Associated with Roads
R-7.	Control of Surface Road Drainage Associated with Roads
R-9.	Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects
R-12.	Control of Construction in Streamside Management Units
R-13.	Diversion of Flows Around Construction Sites
R-14.	Bridge and Culvert Installation and Protection of Fisheries
R-15.	Disposal of Right-of-Way and Roadside Debris
R-16.	Specifying Rip-Rap Composition
R-17.	Water Source Development Consistent with Water Quality Protection
R-18.	Maintenance of Roads
R-19.	Road Surface Treatment to Prevent Loss of Materials
W-1.	Watershed Restoration
W-4.	Oil and Hazardous Substance Spill Contingency Plan and Spill Prevention Control and Countermeasure Plan
W-5.	Cumulative Watershed Effects
W-7.	Water Quality Monitoring
W-8.	Management by Closure to Use (Seasonal, Temporary, and Permanent)
W-9.	Surface Erosion Control at Facility Sites
VM-3.	Revegetation of Surface Disturbed Areas

Appendix C – Revegetation Plan

The proposed project area is vulnerable to both erosion and the establishment and spread of invasive plant infestations. Disturbed areas would be re-vegetated to prevent the establishment or spread of invasive plants and noxious weeds. Disturbed areas would also be re-vegetated for bank stabilization and erosion prevention. The following areas may be re-vegetated dependent on the requirement and need of each individual site influenced by the activity that would occur at these sites.

- Culvert removal or replacements areas
- Areas with vegetation removal and canopy loss
- Decommissioned roads
- Roads placed into storage
- Staging areas
- Disturbed areas from project implementation
- Areas needing erosion control

Project implementation schedule must be communicated to District Botanist, District Silviculturist, and Forest Soil Scientist well in advance to facilitate rehabilitation and re-vegetation of sites. Adequate advance would have to allow enough time (one year minimum notice) to grow plants and/or purchase native plant materials from disease and weed free nurseries.

Revegetation Species Lists

All revegetation species would be native and be appropriate for the habitat type and elevation.

Table C- 1. Some appropriate revegetation species

Plant Species	Comments
Chamaecyparis lawsoniana (Port Orford Cedar)	Must be disease resistant stock and proper elevation band
Alnus rubra (Red alder)	Riparian species proper elevation band
Populus balsamifera ssp. trichocarpa (black cottonwood)	Riparian species proper elevation band
Fraxinus latifolia (Oregon ash)	Riparian species proper elevation band
Pinus lambertiana (sugar pine) Must be rust resistant stock	Upland species proper elevation band
Thuja plicata (western red cedar)	Riparian high elevation band
Abies magnifica (red fir)	Upland high elevation band
Acer macrophyllum (bigleaf maple)	Riparian species proper elevation band

Plant Species	Comments
Cornus sericea ssp. sericea (American dogwood)	Riparian species proper elevation band
Acer circinatum (vine maple)	Riparian species proper elevation band
Holodiscus discolor (ocean spray)	Upland species proper elevation band
Rhamnus californica (coffeeberry)	Upland species proper elevation band
Additional tree and shrub species	Species appropriate for site location plant community, habitat, and elevation
Native forb species	Species appropriate for site location plant community, habitat, and elevation
Native grass seed	Species appropriate for site location plant community, habitat, and elevation

Revegetation Timing

Disturbed areas would be re-vegetated dependent on implementation timing. Factors for optimum results for successful survivability would be contingent on life form, species specific, and elevation bands. Revegetation would be could potentially be phased due to completion of implementation operations.

The first phase would include erosion control and invasive plant mitigations for establishment and spread of infestations. This phase would include planting of native grasses in disturbed areas and for slopes greater than 45% areas may be mulched with weed free straw or mulch.

Phase two would include planting trees, shrubs, and forbs. Phase two timing would conditional on growing season elevation bands.

Examples are: Disturbed sites with a July implementation completion would be planted with native grass seed (and possibly mulching) for preventing impacts during the initial period. The following spring Trees, shrubs, and forbs would be planted during the optimal establishment conditions.

Revegetation Sites

Revegetation would require site-specific reconnaissance for stand typing to ensure the proper species mixture would be selected for the site. Site visits would also assess timing and planting conditions.

For culvert removal and replacement; roads that would be decommissioned; roads to be put into storage; and other disturbed sites the following general re-vegetation guidelines would be followed.

Table C- 2. Revegetation site types and criteria

Revegetation Site Type	Comments and criteria
♦ Culverts replacement and removal areas would be re-vegetated with the riparian native tree, shrub, forb, or grass species listed.	♦ Resistant Port Orford Cedar would be used at least 25 feet above the stream and 25 between seedlings to prevent spores migrating with water into their root system.(approx.. 70 trees/acre) ♦ Other riparian tree and shrub species can be planted in disturbed areas and to the stream channel ♦ Tree and shrubs will be planted in all disturbed areas to minimize soil erosion into stream channel and provide bank stability. Grass and forbs could be utilized for appropriate site needs
♦ Decommissioned roads would be seeded with the appropriate native grass seeds and/or trees and shrubs	♦ The first 100 feet or wherever this is ripping and re-contouring would be seeded with native grass seed ♦ Areas with slopes over 45 percent may be seeded with native grass seed and mulched with weed free mulch and/or planted with the appropriate trees, shrubs, or herbs for the habitat. ♦ If road is ripped and re-contoured
♦ Staging areas or other disturbed areas, and roadbeds going into storage with erosion concerns	♦ Would be planted with the appropriate tree, shrub, herb, or grass species dependent on habitat, soils, elevation, and disturbance area.

POC Planting Instructions

- Plant resistant stock POC in their respective planting zones. Follow the breeding zone map for stock placement.
- Plant resistant stock only in un-infested sites where POC normally occurs.
- Space POC seedlings 25 feet from water sources and 25 foot spacing. See below figure for example of planting in riparian zone.

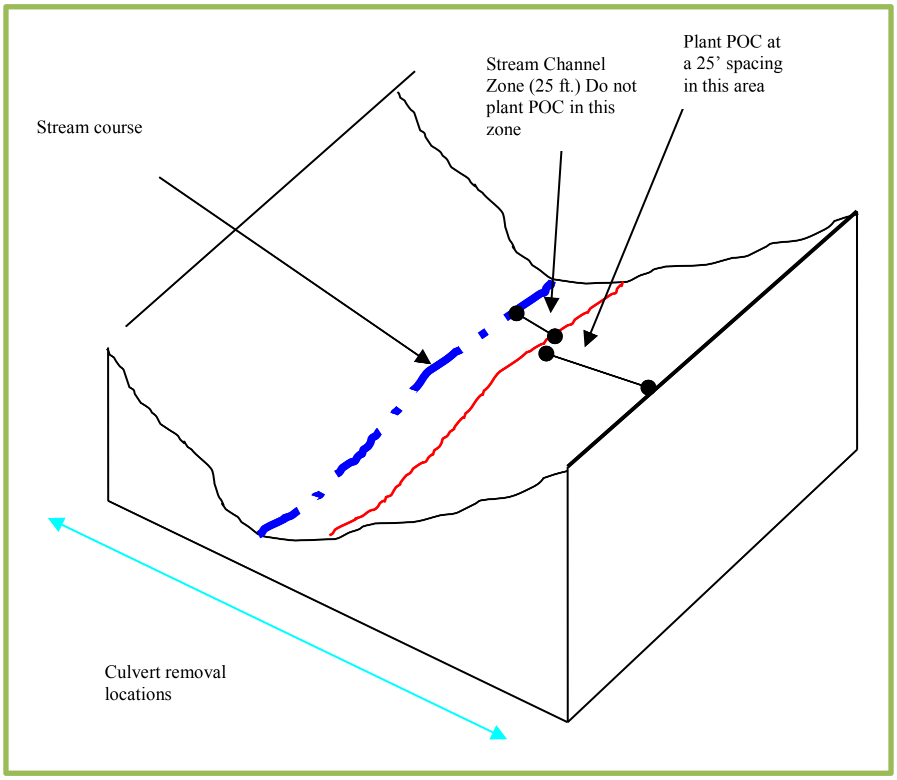

Figure C- 1. POC planting location diagram for culvert removal locations

Appendix D – Applicable Fish Passage Restoration Criteria

The following criteria, applicable to the Sucker Creek Legacy Roads and Trails project activities, are required under the Endangered Species Act- Section 7 Programmatic Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential fish Habitat consultation. Fish Habitat Restoration Activities in Oregon and Washington, 2013 (ARBO II).

Fish Passage Restoration includes the following: total removal of culverts or bridges, or replacing culverts or bridges with properly sized culverts and bridges, replacing a damaged culvert or bridge, and resetting an existing culvert that was improperly installed or damaged; stabilizing and providing passage over headcuts; removing, constructing (including relocations), repairing, or maintaining fish ladders; and constructing or replacing fish screens for irrigation diversions. Such projects will take place where fish passage has been partially or completely eliminated through road construction, stream degradation, creation of small dams and weirs, and irrigation diversions. Equipment such as excavators, bull dozers, dump trucks, front-end loaders, and similar equipment may be used to implement projects.

Stream Simulation Culvert and Bridge Projects – All road-stream crossing structures shall simulate stream channel conditions per *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road- Stream Crossings* (USDA-Forest Service 2008), located at: http://stream.fs.fed.us/fishxing/aop_pdfs.html

i. **Culvert criteria –** Within the considerations of stream simulation, the structure shall, at a minimum, accommodate a bankfull wide channel plus constructed banks to provide for passage of all life stages of native fish species (for more information, reference Chapter 6, page 35 of the USFS Stream Simulation Guide). The following crossing-width guidance applies to specific ranges of entrenchment ratios as defined by Rosgen (1996):

1. Non-entrenched Streams: If a stream is not fully entrenched (entrenchment ratio of greater than 1.4), the minimum culvert width shall be at least 1.3 times the bankfull channel width. This is consistent with *Anadromous Salmonid Passage Facility Design* (section 7.4.2 "Stream Simulation Design") (NMFS 2011). However, if the appropriate structure width is determined to be less than 1.3 times the bankfull channel width, processes for variances are listed in "iv" and "v" below.

2. Entrenched Streams: If a stream is entrenched (entrenchment ratio of less than 1.4), the culvert width must be greater than bankfull channel width, allow sufficient vertical clearance to allow ease of construction and maintenance activities, and provide adequate room for the construction of natural channel banks. Consideration should be given to accommodate the floodprone width. Floodprone width is the width measured at twice the maximum bankfull depth (Rosgen 1996).

ii. **Bridge Design**

1. Bridges with vertical abutments, including concrete box culverts, which are constructed as bridges, shall have channel widths that are designed using the culvert criteria (PDC 21a-i above). This opinion does not cover bridges that require pile driving within a wetted stream channels.

2. Primary structural elements must be concrete, metal, fiberglass, or untreated timber.

Concrete must be sufficiently cured or dried13 before coming into contact with stream flow.

3. Riprap must not be placed within the bankfull width of the stream.

4. Riprap may only be placed below bankfull height when necessary for protection of abutments and pilings. However, the amount and placement of riprap should not constrict the bankfull flow.

iii. **Crossing Design**

1. Crossings shall be designed using an interdisciplinary design team consisting of an experienced Engineer, Fisheries Biologist, and Hydrologist/Geomorphologist.

2. Forest Service crossing structures wider than 20 feet or with costs that exceed $100,000 shall be reviewed by the USDA-Forest Service, Region 6, Aquatic Organism Passage Design Assistance Team.

3. At least one member of the design team shall be trained in a week- long Aquatic Organism Passage course based Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings (USDA-Forest Service 2008).

4. Bankfull width shall be based on the upper end of the distribution of bankfull width measurements as measured in the reference reach to account for channel variability and dynamics.

iv. **NMFS fish passage review and approve –** If the structure width is determined to be less than the established width criteria as defined above, a variance must be requested from NMFS for consistency with criteria in NMFS (2011).

v. **Opportunity for individual consultation –** The Action Agencies have a legal duty under the ESA to consult with NMFS and USFWS on a project- specific basis if they prefer to operate outside the conditions in this opinion. The standards provided in this document are conservative for the purpose of this programmatic and may or may not be applicable to projects that undergo individual Level 1 Consultation. The standards in ARBO II are not new defaults to be used universally outside the programmatic arena.

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Spine Page

Sucker Creek Legacy Roads and Trails Environmental Assessment